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Shiftwork
From a Work and Family Perspective

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by

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Abstract

In recent years, the use of shift scheduling outside the standard 9 to 5 workday has been on the rise. In 1995, 3.5 million employees (roughly 30% of the labour force) worked a non-day schedule, up from 3 million in 1991. Forecasts indicate that the need for shiftworkers will continue to grow, as organizations respond to global pressures and the need for round-the-clock customer convenience.

As shiftwork continues to play a vital role in public and economic well-being, information is needed on the effects of shiftwork on *employee* well-being. Having to work schedules that are out of phase with the rhythms of society can lead to stress, fatigue and interference with family time and relationships. Much of what we know about the effects of shiftwork on individual employees, however, is based on fairly traditional shiftworking populations, primarily factory workers and nurses. Such limited samples no longer capture the occupational and demographic diversity of the modern shiftworker.

This study of 270 men and women working in a modern service industry was designed to tap a sample more representative of shiftworkers in the '90s. Using established measures from the work-family literature, it compared rotating shiftworkers to employees on daytime schedules in terms of work attitudes, personal life, and the ability to balance work and family.

Quantitative analyses of survey data suggested that rotating shiftworkers experienced significantly greater work-family conflict than dayworkers, greater difficulties in individual time management, and held significantly less favourable work attitudes. Rotating shiftwork was suggested to be most problematic for women, for parents, and for workers with low control over the scheduling of their work hours.

Qualitative data collected through interview suggested that low control over work hours was a major contributor to the adverse effects of shiftwork. The rigid time and place constraints associated with shiftwork in this organization highlighted the disparity between a workplace that was rapidly changing and an infrastructure that lagged behind. Operating hours continued to expand with no concomitant increase in support for the workers affected by the changes. In addition, the "double day" of paid work and household labour described by the shiftworking mothers in this organization indicated that few adjustments to accommodate their work hours had been made at home either.

The findings of this research illustrate some of the unique pressures that may exist for the modern shiftworker as the confluence of labour force, social, and economic changes increase pressures from both the work and home domains. Private and public sector policy makers may need to respond to the changing needs of today's shiftworker if they hope to remain competitive and ensure equity and the well-being of employees.

Résumé

Depuis quelques années, le recours aux horaires par quarts de travail ne correspondant pas aux heures de travail normales (de 9 h à 17 h) est en hausse. Le nombre de personnes travaillant selon de tels horaires est passé de 3 millions en 1991 à 3,5 millions en 1995 (environ 30 % de la population active). Selon les prévisions, le besoin en travailleurs par quarts continuera d'augmenter, les entreprises tentant de s'ajuster aux pressions mondiales et de servir leur clientèle 24 heures sur 24.

À mesure que le travail par quarts continuera de jouer un rôle essentiel dans le bien-être économique et public, davantage d'information sera nécessaire pour évaluer ses effets sur le bien-être de *l'employé*. Le fait d'être soumis à des heures de travail déphasées des rythmes de la société peut causer du stress et de la fatigue, et nuire aux relations familiales. Toutefois, ce que nous connaissons des effets du travail par quarts sur les employés s'appuie sur les populations de travailleurs par quarts plutôt typiques, essentiellement des travailleurs d'usine et des infirmières. Des échantillons aussi restreints ne correspondent plus à la diversité professionnelle et démographique du travailleur par quarts contemporain.

Cette enquête menée auprès de 270 hommes et femmes travaillant dans une industrie de service moderne a été conçue pour cibler un échantillon plus représentatif des travailleurs par quarts des années 90. Appliquant des mesures établies tirées de la documentation sur le paradigme travail-famille, elle a comparé les travailleurs par quarts aux employés travaillant selon un horaire de jour aux plans des attitudes professionnelles, de la vie personnelle et de la capacité d'équilibrer le travail et la famille.

Des analyses quantitatives des données de l'enquête révèlent que les travailleurs par quarts sont sensiblement plus exposés que ceux qui ont des heures de travail normales à un conflit travail-famille plus important et à de plus grandes difficultés dans la gestion personnelle de leur temps et, d'une manière significative, font preuve de moins bonnes attitudes professionnelles. Le travail par roulement semble causer davantage de problèmes aux femmes, aux parents et aux travailleurs qui n'ont qu'un faible contrôle sur l'établissement de leur horaire de travail.
Les données qualitatives recueillies lors des entrevues indiquent qu'un faible contrôle sur les horaires de travail contribue grandement aux effets négatifs du travail par quarts. La rigueur des contraintes de temps et d'espace associées au travail par quarts dans cette entreprise ont mis en évidence la disparité entre un milieu de travail en évolution rapide et une infrastructure qui ne suit pas au même rythme. Les heures d'exploitation ont continué d'augmenter sans qu'il n'y ait une hausse parallèle de l'appui aux travailleurs touchés par les changements. En outre, la "double journée de travail", c'est-à-dire le travail rémunéré et les tâches ménagères que décrivent les mères travaillant par quarts dans cette entreprise, indique que, à la maison également, bien peu d'ajustements ont été faits pour accommoder leur horaire de travail.

Les résultats de cette recherche illustrent en partie les pressions sans égal que subissent les travailleurs par quarts contemporains alors que la multitude de changements dans la population active, ainsi que des changements sociaux et économiques, se conjuguent pour intensifier les pressions à la fois au travail et à la maison. Les décideurs des secteurs public et privé auront peut-être à répondre aux besoins changeants des travailleurs par quarts d'aujourd'hui s'ils veulent demeurer compétitifs et assurer l'équité et le bien-être de leurs employés.

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1. Introduction and Outline of the Report

The use of shift scheduling outside of the standard 9 to 5 work day has become an established labour pattern in today's work world. In 1995, three out of ten employees in Canada worked shift, including night workers, afternoon workers, and rotating shiftworkers who circulate through a variety of shifts over a prescribed period (Statistics Canada, 1997). Society relies on shiftworkers not only to provide essential services such as policing and health care, but also to offer services we enjoy, such as dining and shopping (Monk and Folkard, 1992). In addition, industry maintains a competitive edge through its force of shiftworkers who staff continuous operations in manufacturing and provide 24-hour service to personal and business consumers. (Ibid.)

Over the last two decades, the incidence of shiftwork has increased, and forecasts indicate that the use of non-day scheduling will continue to grow in response to globalization and increased demand for productivity and round-the-clock customer convenience (Sunter, 1993). Whereas extended operating hours may be serving business well, the effect of non-day shifts on the growing number of employees who must now work these schedules remains largely unknown.

Although a sizable literature exists on the effects of shiftwork on employee well-being, much of it has been based on studies of fairly traditional shiftworking populations, notably male factory workers and female nurses. Recent economic, social and labour force changes suggest that this literature may have only limited relevance to the workforce of the '90s. In 1995, only 14% of Canadian shiftworkers worked in occupations such as processing, machining, and fabricating (Statistics Canada, 1997). Instead, the majority were employed in professional, managerial and service occupations, which together accounted for nearly 50% of shiftworkers (Ibid.). In addition, the influx of women into the paid labour force, and the emergence of the dual-income family as the predominant family form (Moore, 1990) mean that the "typical" shiftworker is no longer a male factory worker with a wife at home to see to the needs of the family. In 1995, 46% of shiftworkers were women.

These trends suggest that home and work are no longer the separate spheres they were when early shiftwork studies were conducted. Shiftwork now poses challenges to both men and women in a variety of work settings who must combine their paid work with personal pursuits and the care of their families. Research shows that employees who have difficulty managing their work and family roles experience stress on the job and at home and, ultimately, may seek work elsewhere or exit the labour force. Policy makers need access to more recent information on the needs of this important labour force segment if they are to design effective programs, attract skilled workers, and ensure equity and well-being.

Outline of the Report

This research attempts to address the need for more relevant information by moving beyond the study of the traditional factory worker to tap a sample of employees more representative of the occupational and demographic diversity of shiftworkers of the '90s. Toward this goal, the sample is drawn from an organization in a modern service industry in Western Canada, and includes both male and female shiftworkers in a variety of occupations. Data were collected by means of a pencil and paper survey and a series of telephone interviews.

The next section of the report provides a definition of shiftwork, and briefly describes the occupational and demographic distribution of shiftwork in Canada. Section 3 discusses various theoretical frameworks for examining the relationship between shiftwork and work-family life. Section 4 summarizes and evaluates the relevant empirical literature on shiftwork. Research questions and methodology are described in Section 5. Results are presented in Section 6 (for the questionnaire survey sample) and in Section 7 (for the telephone interview sample). Section 8 integrates the results of the two studies and discusses the policy implications of this research. Results are tabulated in Appendix A.

2. Shiftwork: Its Definition And Distribution

2.1 Defining Shiftwork

Shiftwork can be defined broadly as a pattern of working-hour arrangements whereby employees work organizationally defined different blocks of time on a regular basis (Pierce et al.,1989). Normally, shifts can be classified into days (roughly 9am to 5pm), afternoons or evenings (starting times between 3pm or 4pm, ending around midnight), or the midnight or "graveyard" shift (starting time around 11pm or midnight, ending at 7am or 8am). Start and stop times, however, are only one of many dimensions of shift schedules. Other shift characteristics are also important in defining shiftwork, including the presence or absence of a rotation (e.g., a "fixed" shift of straight midnights or straight afternoons versus a rotating schedule) and the duration of the shift (e.g., an 8- versus a 12-hour shift). Irregular shifts that are variable and posted only a few days in advance are also not uncommon (Sunter, 1993).

Some authors have suggested simplifying the investigation of shift schedules by developing a dichotomy of "day" versus "non-day" shifts, the latter being a catch-all for any shift other than the traditional 9 to 5 schedule (Finn, 1981; Presser, 1986). The "non-day" category, however, was believed to be too gross to capture information relevant to this study, as it ignores two characteristics of shift schedules that are important to the ability to balance work and family: the shift's rotational characteristics, and the specific time of day worked. For example, a "non-day" shift would include both rotating shifts and fixed shifts outside of the 9 to 5 workday. Rotating schedules, however, may affect work-family balance in ways that are different from the effects of a fixed "non-day" shift. Employees with schedules that change from week to week might be expected to have unique problems in structuring their personal lives, including difficulty in finding child care for varying schedules, and being shut out of volunteer or leisure pursuits requiring fixed time commitments. On the other hand, shiftworkers who work predictable, fixed schedules (e.g., fixed nights or afternoons) might be better able to plan their personal lives around their work hours.

The "non-day" category also precludes access to information about the particular time of day worked. Research suggests that difficulties in balancing work and family are often specific to

the time of day worked (Hertz and Charlton, 1989; Mott et al., 1965; Nock and Kingston, 1988). For example, working afternoon and early evening hours has been found to interfere with interactions with children (Mott et al., 1965; Nock and Kingston, 1988). Conversely, midnight shifts can cause disruption in the time couples have available to spend alone with each other (Hertz and Charlton, 1989; Mott et al., 1965).

In order to provide a shift classification that was sensitive both to the rotational characteristics of the shift schedule and to the time of day worked, the following four definitions were employed in this study:

Daytime	A daytime schedule which either follows a standard 9 to 5 pattern, or begins in the morning and ends in the afternoon
Afternoons/Evenings	Starting times roughly between 3pm and 4pm, ending around midnight
Nights/Graveyard	Starting times around midnight, ending around 8am
Rotating	A combination of two or more of the above shifts that change periodically

These categories generally encompass start and stop times that are meaningful to an analysis of work and family balance, and allow us to isolate shifts which rotate from those which do not. They also have the advantage of being roughly analogous to classifications commonly in use by Statistics Canada (1997; 1993) and the U.S. Bureau of Labor Statistics (Mellor, 1986).

2.2 Prevalence of Shiftwork in Canada

Statistics Canada provides comprehensive information both on workers' schedules and on the personal and family characteristics of workers. Unless otherwise indicated, all data provided in Sections 2.2 through 2.5 have been drawn from a special tabulation of the 1995 Survey of Work Arrangement (SWA) data prepared by Statistics Canada and Human Resources Development Canada for the purposes of this research. Comparative data based on the 1991 survey year were obtained from previously published sources (Statistics Canada, 1993).

SWA data suggest recent growth in the use of non-day scheduling. Between 1991 and 1995, the number of shiftworkers in Canada increased 17%, from roughly 3 million in 1991 to 3.5 million in 1995. In 1995, shiftworkers represented 32% of all paid workers in Canada (Table 1). The prevalent form of shiftwork in Canada is an irregular non-day schedule: in 1995, 33% of shiftworkers worked an irregular shift (one that varies, but is arranged roughly a week in advance). Approximately 32% of shiftworkers worked rotating shifts; 16% worked a fixed afternoon shift, and 6% worked a fixed midnight shift (Table 2).

2.3 Occupational Distribution of Shiftwork

The stereotype of the shiftworker as a blue-collar factory worker is laid to rest by data showing that in 1995, white collar occupations accounted for nearly three quarters (71%) of shiftworkers (not shown). Managerial and professional positions represented the largest occupational category (24% of all shiftworkers), followed by service workers (23%); clerical (12%), and sales (12%). In contrast, only 14% of shiftworkers were in processing, machining and fabricating. Transport and material handling accounted for an additional 11% of shiftworkers.

2.4 Demographic Distribution of Shiftwork

The recent expansion of shiftwork to encompass a broad range of industries means that shiftworkers now represent a demographically diverse segment of the labour force. Following is a brief overview of the demographic and labour force characteristics of shiftworkers, including gender and family circumstances.

2.4.1 Gender

Men and women work shift in roughly equal proportions. In 1995, 33% of men (representing 1.9 million men) worked a non-day schedule, compared with 31% of women (1.6 million. Men are much more likely than women to have pre-arranged schedules (Table 3). In 1995, only 29% of male shiftworkers reported an irregular schedule (no predictable pattern), compared with 38% of women. Instead, men tended to work schedules which rotated on a regular basis: 38% of men worked a rotating schedule, compared with 25% of women.

Table 3 also suggests a gender difference in the full-time/part-time distribution of shiftwork. First, it should be noted that very few men (less than 10%) work part time, irrespective of work schedule. Those who do work part time tend to work a non-day shift (75% of men who work part time work a non-day shift). On the other hand, women are much more likely than men to work part-time hours (26% of women work part time), and those who do are fairly evenly distributed between regular day schedules (representing 46% of women who work part time) and non-day shifts (54%).

2.4.2 Family Demographics

One third of shiftworkers, whether male or female, are parents of children under 16. Like the full-time/part-time data, the type of shift worked is strongly related to both family characteristics and gender (Table 4). The most striking observation is that the presence and age of children in the family has virtually no effect on the shift distribution for men (roughly 46% of married men work rotating shifts, and 26% work irregular schedules, regardless of whether or not they have children). Among women, however, the presence of preschool-age children (under 6) is associated with (1) an increase in the prevalence of a fixed afternoon shift (21% of shiftworking women with preschoolers reported an afternoon schedule, compared with 17% of women with only school age children 6 to 15, and 15% of married women overall), and (2) a decrease in the irregular shift category (28% of mothers of preschoolers reported an irregular schedule, compared with 33% of mothers with only school-age children, and 37% of married women overall).

The link between family status and shift among women, but not among men, suggests that child care and other domestic responsibilities may play a role in women's schedule choices. The increase in fixed afternoon shifts among mothers of preschoolers and the concomitant decrease in the irregular shift category suggests that jobs which involve unpredictable work schedules may be particularly unattractive to women in this life cycle stage.

It should also be noted that, unlike married women, women who parent alone may not have the option of moving to an afternoon shift more compatible with childrearing. Table 4 suggests that the pattern of shiftwork among female lone parents is very similar to the pattern for women in general. The majority of lone mothers who work shift (35%) work an irregular shift, comparable to the proportion among all shiftworking women (38%). These data serve as a

reminder that shiftwork may take a considerable toll on lone parents (83% of whom are female; The Daily, 1997), as many simply cannot afford the luxury of switching jobs or reducing their work hours when work schedules are incompatible with child care needs (Lero et al., 1992).

2.5 Reasons for Working Shifts

The vast majority of shiftworkers in Canada appear to have little choice in whether or not they work shift: in 1995, 82% of men and 73% of women claimed they work shift because it was required by the job (not shown). Only a very small proportion of men and women (3%) indicate that they work shift to earn more money, either to increase family income generally, or for the shift differential sometimes involved. Again, women's reasons for working shift vary depending on the presence of children in the family, whereas men's reasons for working shift are unrelated to their family characteristics. (One in five mothers work shift to help them cope with family responsibilities; virtually no men, regardless of the presence of children, report working a shift schedule to ease family responsibilities.)

2.6 Shiftwork in Dual-Income Families

Recent growth in the prevalence of dual-income families has prompted interest in examining shiftwork patterns using the couple as the unit of analysis. Table 5 compares individuals in couples in which at least one partner works shift to those in which both partners work regular daytime schedules. These data indicate that in 1995, 44% of dual-income couples in Canada included at least one spouse who worked a non-day shift, up from 41% in 1991 (Statistics Canada, 1993). The data also indicate that shiftwork may provide a mechanism for female partners to continue their work involvement *on a part-time basis outside of the regular 9 to 5 workday* and still manage their responsibilities at home during the day. For example, in 1995, at least three quarters of dayworking couples (76 to 80%) were couples in which both partners were employed full time, and this pattern held irrespective of the presence and age of children in the family (in other words, when a female partner worked a straight daytime schedule, her schedule was most likely full time). Comparable data for the shiftworking couples shows: (1) a much lower level of the dual full-time pattern (only 62% of shiftworking couples were couples in which

both partners worked full time), and (2) a consistent decline in the dual full-time pattern as child care demands increased (falling to just over half among shiftworking couples with preschoolers).

Table 6 provides data on shiftworking couples only. This more detailed analysis supports the contention that women may be using *part-time non-day* work as a means of combining paid work with childrearing. Where the wife worked a fixed day schedule, nearly three-quarters of shiftworking couples were couples in which both partners worked full time, irrespective of the presence and age of children. Where the wife worked a non-day schedule, however, the dual full-time pattern was much less common. For example, only 50% of couples in which the husband worked days and the wife worked non-day shifts were couples in which both partners were employed full time. In couples with preschoolers, only 41% were those in which both partners worked full time. Instead, the trend was for mothers to move to a part-time non-day shift, while fathers retained their full-time status.

A caveat is in order in interpreting the above shiftwork patterns. Although it would appear from these data that shiftwork may provide women with a schedule arrangement that is better suited to their child rearing demands, the interrelatedness between *part-time work* and *shiftwork* prevents us from drawing this conclusion. It may be the case that it is not the non-day hours per se that are attractive to mothers, but the fact that non-day hours are more readily available on a part-time basis. If part-time work is not an option among regular day jobs, then women who want to reduce their work hours might turn to non-day jobs which *can* offer them fewer hours per week. If this is the case, shiftwork may be a "necessary evil" associated with part-time work, not a drawing card.

2.7 Summary

The preceding data indicate that men and women are now nearly equally represented among non-day workers. One third of shiftworkers have children at home under the age of 16, and the majority of these parents work full time. The relatively high incidence of shiftwork among dual-income couples, particularly dual-income couples with children, reveals that shiftwork is a fact of life for a substantial proportion of Canadian families. It appears, however, that most

employees work shift because it is required by the job and they have no alternative. Although shiftwork may provide advantages to parents, such as the ability to off-shift child care, its potential risks to individuals in terms of stress and fatigue must also be considered.

3. Theoretical Foundations For Research On Shiftwork

The following theoretical perspectives provide frameworks for examining the particular stresses that are imposed on the shiftworker, and attempt to explain the effects on the employee in terms of biological, social, and psychological functioning. They also acknowledge individual differences in employees' adjustment to shiftwork, and identify possible intervening variables that may serve to mitigate or exacerbate the effects of non-day shifts.

3.1 The Field-Theoretical Approach

Thirty years ago, Mott, Mann, McLoughlin and Warwick (1965) published their comprehensive and now classic study of the effects of shiftwork among a sample of American industrial workers. These authors viewed shiftwork from the "field-theoretical" perspective (Cartwright, 1959), arguing that employee responses to shiftwork were best understood when viewed as products of a field of "forces" emanating from the environment (the timing of the shift, the difficulty of the work, its wages, supervision and other work context forces); from society (the rhythms of social and business activity in the shiftworker's community, the amount of noise in his/her neighbourhood, and the family's ability to adjust to the shift schedule); and from internal psychological and physiological sources (the shiftworker's health, personality, and the ease with which he or she is able to adjust time-oriented body rhythms).

The influence of this broad, ecological approach to the study of shiftwork response can be seen in most of the perspectives discussed below. In fact, its scope is so broad that there is inevitably overlap in the frameworks employed. Most models differ only in terms of which of the shift-relevant "forces" (i.e., work-related forces, social forces, physiological forces, etc.) they choose as focus.

3.2 Adjustment

Research has shown that there is considerable variability in the extent to which individuals successfully adapt to their work pattern (Monk and Folkard, 1992; Mott et al., 1965). Monk and Folkard (1992) describe two models of "stress and strain" which attempt to account for the various effects of shiftwork on individuals.

The first is Colquhoun's and Rutenfranz' (1980) stress and strain model, which asserts that detrimental effects do not arise from the objective stresses of shiftwork per se, but from the subjective strain that develops within an individual who is trying to cope with the disturbed pattern of sleep and activity that the job requires. This model identifies intervening coping variables that can affect strain (perceived adjustment), even when the stress (shift schedule) remains the same. Intervening variables in the model include psychological characteristics of the individual, domestic circumstances, and characteristics of the job.

The second framework presented by Monk and Folkard is Monk's (1988) model of coping. This model views shiftwork strain as a function of three basic stresses: circadian (biological clock) factors, sleep factors, and social-domestic factors. All three are interrelated in this model, so all three must be functioning well for strain to be entirely absent. For example, circadian rhythms may be well aligned, and sleep undisturbed, but such gains cannot be at the expense of marital harmony, or it is hypothesized that strain will persist.

3.3 Community Rhythms

Advanced by Dunham (1977), community rhythms theory postulates that a shiftworker's level of adjustment will be determined by the extent to which there is synchrony between his or her schedule and the temporal patterns of the community in which he or she lives. According to Dunham, there is a critical window for social activities that occurs between 4pm and 12am. For the afternoon or night worker, this block of hours conflicts either with work time or sleep time. Out of phase with the rest of the community, the shiftworker experiences adjustment problems in important non-physiological functions, including attitudes toward both home and work life. Where communities and services are more accommodating of non-day workers, therefore, adjustment should be facilitated.

3.4 Routine Formation

A second model which examines the fit between the temporal patterns of shiftwork and social rhythms is Jamal's (1981) theory of routine formation. Whereas Dunham (1977) stressed the relationship between shift schedules and community routines, Jamal's approach looks at the degree to which the shift schedule leads to the establishment of a daily routine *for the individual.*

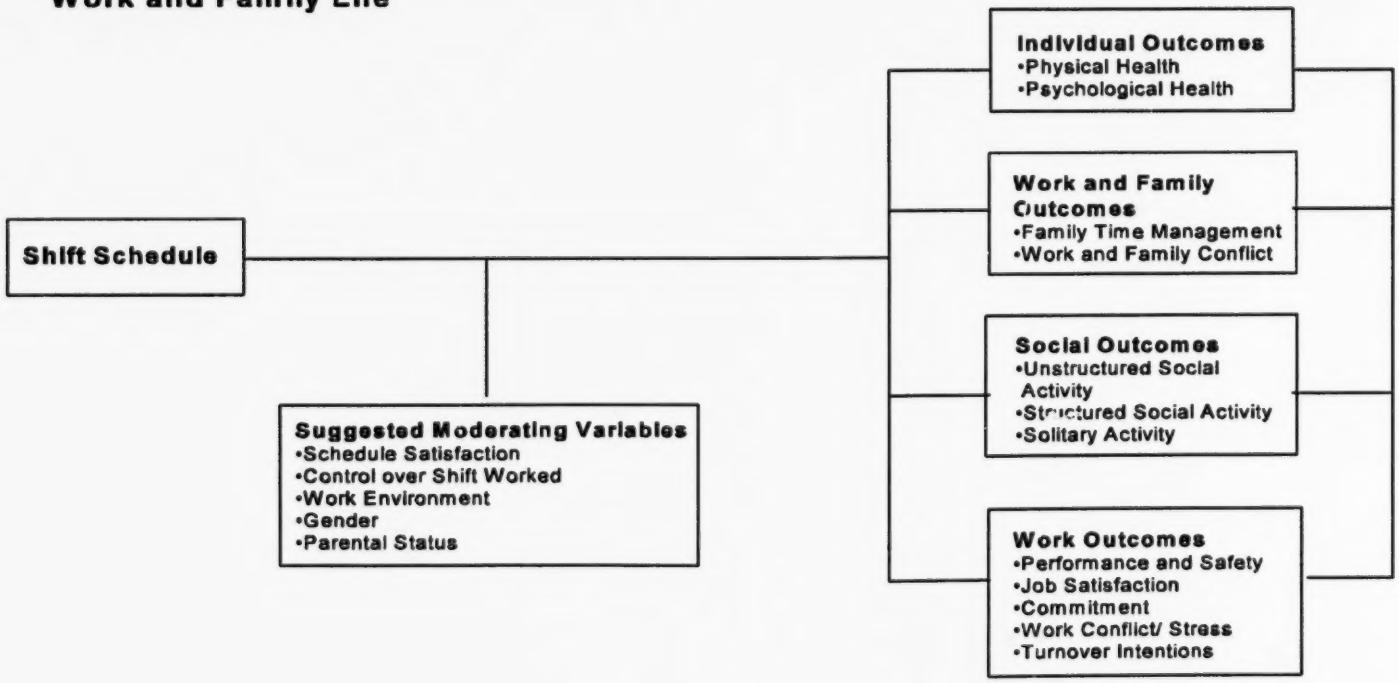
According to this theory, adjustment is determined not only by synchrony with community patterns, but by the individual's general ability to form fixed and predictable patterns for work and non-work activities. Jamal claims that personal and family activities are facilitated through shift schedules which provide for predictable and regular time off. This model suggests that the time of day worked (days vs. afternoons vs. nights) may be less important than having a fixed work schedule (steady days, afternoons, or nights) in terms of shiftworker adjustment.

3.5 Frame of Reference

The frame of reference model is one that has been employed to conceptualize the work-related attitudes and orientations of employees who work alternative scheduling arrangements, usually in the context of part-time schedules (Miller and Terborg, 1979; Rotchford and Roberts, 1982; Feldman, 1990). The theory suggests that workers compare themselves to other employees in the organization when judging the fairness of the rewards they receive as employees (Miller and Terborg, 1979; Rotchford and Roberts, 1982; Feldman, 1990). This perceived "equity" is hypothesized to influence workers' levels of satisfaction, commitment and other work-related attitudes (Feldman, 1990).

A theoretical question arises, however, as to whether employees on non-standard schedules actually compare themselves to workers on "normal" schedules, as might be assumed. Feldman and Doerpinghaus (1992), for example, suggest that employees on part-time schedules may use other part-timers, not the full-time staff, as their referent others, and hence, have better work attitudes than might be expected. In terms of shiftwork, the model implies that employees on non-day schedules may not see "normal" dayworkers as their referent others. Their work orientations may be tempered to some degree by the belief that shiftwork "comes with the job"; hence, other shiftworkers logically represent the standard by which equity is judged. Frame of reference theory implies, then, that caution should be exercised in comparing the work attitudes of shiftworkers to those of dayworkers. The determinants of attitudes like job satisfaction and commitment may be different for shiftworkers than for dayworkers.

Figure 1: Composite Model of the Ways in Which Shiftwork May Affect Work and Family Life



3.6 Discrepancy Theory

Morrow, McElroy and Elliott (1994) suggest that the discrepancy model of job satisfaction advanced by Lawler (1973) and Locke (1969) might serve to clarify how work scheduling affects work-related attitudes. The discrepancy model asserts that when employees realize desired levels of personally important job outcomes, they will show high levels of job satisfaction. Employees who achieve a match between their preferred and actual schedule, therefore, are more likely to be satisfied with their jobs. This model is important to the study of shiftwork in that it introduces schedule preference and schedule control as intervening variables between shift and work-related attitudes.

3.7 Relevance of Theory to the Study of Shiftwork and Family

The preceding summary indicates that considerable groundwork has been laid that may provide a useful framework for examining shiftwork in the context of work and family. Theories advanced by Mott et al. (1965), Colquhoun and Rutenfranz (1980), and Monk (1988) view shiftwork from an interactive, ecological perspective. Their perspectives point to the need for a closer examination of shiftwork effects in light of such moderating variables as gender and work environment.

Dunham's and Jamal's social rhythms theories point to the need to control for variation in the temporal patterning of shifts. These models highlight the level of synchrony between work schedules and important non-work activities, and suggest that shiftwork can be studied more meaningfully when shifts are defined in ways that are sensitive to the rhythms of social and family life.

The last two theories, "frame of reference" and "discrepancy," have implications for the study of employees' work attitudes. Both models introduce psychological factors (frame of reference, perceived equity, etc.) as variables that may moderate the relationships between shift and work attitudes.

Figure 1 pulls together the theories presented in this section, and identifies individual, social, work-family, and work-related variables relevant to the study of shiftwork and family life. This model served as a guide the following literature review and provided the theoretical framework for this research.

4. Literature Review

4.1 Overview

Shiftwork has a long research history and the scope of variables that have been examined in relation to shiftwork is vast. Much of this literature, however, has focussed on health and performance (for a review of this early literature, see Monk and Folkard, 1992). It is only within the last 30 years that attention has shifted to include some of the psychological, social, and work-related consequences of non-day shifts. It is this latter category of variables that will be the primary focus of this summary.

4.2 Individual Effects of Shiftwork

The following section examines literature on the relationships between shiftwork and physical and psychological health.

4.2.1 Physical Health

Interference with basic biological rhythms may be one of the fundamental causes of shiftworker problems and, arguably, is the foundation for social and domestic consequences (Monk and Folkard, 1992). Sleep disturbances are the primary physical complaint of shiftworkers, stemming both from endogenous sources (the worker's internal circadian clock) and exogenous factors (noise and daylight, etc.) (Ibid.). As many as 60 to 70 percent of shiftworkers complain of sleep disruption (Rutenfranz, Haider and Koller, 1985). Digestion, too, is subject to disruption under shift schedules: Mott et al. (1965) found that 75 percent of rotating shiftworkers reported at least some disturbance in appetite and digestion.

4.2.2 Psychological Health

Shiftwork has been connected to increases in tension, stress, psychological depression, irascibility, and a host of other psychological outcomes (Akerstedt and Torsvall, 1978; Bohle and Tilley, 1989; Frese and Semmer, 1986; Frost and Jamal, 1979; Smith et al., 1982; Smith and Folkard, 1993; Zedeck et al., 1983). Among studies of rotating shiftworkers, stress has been found to be highest on the midnight shift and lowest on days (Smith and Folkard, 1993). Similarly, Zedeck et al. (1983) found that tension, irascibility and lack of enthusiasm was greatest for rotators on the midnight shift, and lowest on the day shift. Bohle and Tilley (1989) reported

that stress was significantly greater for 3-shift rotators than for 2-shift rotators who worked no midnights. Akerstedt and Torsvall (1978) found that eliminating midnights from rotations led to significant improvement in mood.

Studies that compare dayworkers to those on shift schedules indicate that mental health is generally better for workers on day schedules. Psychological stress has been reported to be lower for dayworkers than for employees who work rotating shifts (Frese and Semmer, 1986) or employees who work fixed afternoons or midnights (Frost and Jamal, 1979). Smith et al. (1982) found significantly higher depression and anger in afternoon workers, as compared to dayworkers; however, night and rotating workers did not differ significantly from dayworkers on the same measures.

Evidence also suggests that a fixed schedule, regardless of time of day, is more advantageous in terms of mental health than a rotating schedule. Jamal (1981) and Jamal and Jamal (1982) created a dichotomy to compare employees on fixed schedules (including fixed days, fixed afternoons and fixed nights) to those on rotating schedules and found better mental health and lower depression for the fixed schedule group. Barton et al. (1993) also reported lower psychological stress among employees on fixed night shifts when compared to employees on rotating schedules.

4.3 Work and Family Outcomes

Individuals who have difficulty balancing their work with their home lives may experience problems in two major areas. First, they may have difficulties in time management and find it hard to work out the logistics of family life or to make time for family activities and responsibilities (Bohen and Viveros-Long, 1981). Second, they may perceive high levels of work-family conflict, a form of interrole conflict in which the pressures from the work and family domains are mutually incompatible (Kahn et al., 1964). Shiftwork clearly has the potential to generate conflict from both sources. Directly, it dictates the time available for family; indirectly, the physiological and psychological stresses associated with non-day shifts might lead to substantial negative carryover to family life. The following section of the review summarizes the shiftwork literature on family time management and work-family conflict.

4.3.1 Family Time Management and Family Relationships

Nock and Kingston (1988) suggest that the degree to which work interferes with family roles is determined in part by the worker's gender, and in part by the particular time of day the worker is unavailable to the family. This research indicated that for every hour worked during the after-school "window" (late afternoon-early evening), women lost an estimated 42 minutes with their children. Men who worked during this period lost 30 minutes. These findings imply that workers on afternoon shifts (which by definition span most or all of the after-school hours) will experience greater interference in their roles as parents than workers on other shifts. In addition, the research suggests that women on afternoons may experience more interference than will men.

The only two shiftwork studies which have isolated afternoon workers from those on other fixed schedules (Mott et al., 1965; Tasto et al., 1978) tend to support the hypothesis that afternoon work interferes with parenting. These studies indicated that workers on afternoon shifts did in fact report more interference with parental activities than workers on other shifts.

Night work, on the other hand, has been associated with disruption in marital relationships (Knutsson, 1986; Mott et al., 1965; Tepas, 1985; Tasto et al., 1978). Mott et al. (1965) and Tasto et al. (1978) found that workers on night shifts and rotating shifts experienced greater disruption in the spousal role, including interference with time for relaxation and sexual activities. Knutsson (1986) and Tepas (1985) reported significantly increased divorce rates for night shiftworkers as compared to dayworkers.

4.3.2 Work-Family Conflict and Role Overload

The effects of shiftwork on parenting and the spousal role suggest that shiftworkers might encounter substantial conflict between their work and family roles. Using a measure of role overload, Jamal and Baba (1992) tested this possibility among nurses, and reported that nurses on 3-shift rotations reported greater overload between their work and non-work lives than those on 2-shift rotations or fixed shifts. Work by Shamir (1983) and Bohle and Tilley (1989) indicated that work-family conflict was significantly higher for afternoon workers, as compared to workers on either days or other non-day shifts, and that work-family conflict was a good predictor of psychological symptoms for afternoon workers. Since late afternoon and early evening hours are times typically reserved for family and social interaction, it makes sense that afternoon shifts

should generate greater perceptions of conflict. These two latter studies are also consistent with the previously cited work by Nock and Kingston (1988), Mott et al. (1965), and Tasto et al. (1978) which concluded that afternoon shifts were most disruptive to family activities, particularly the parenting role.

4.4 Social Outcomes

Investigators of the effects of shiftwork on social life typically divide social activities into two categories: structured social activities, such as club membership, charitable work, or community involvement; and unstructured social activities, such as visiting with friends and relatives. The evidence is fairly consistent that non-day shifts interfere with participation in structured social activities (Akerstedt and Torsvall, 1978; Frost and Jamal, 1982; Jamal, 1981; 1989; Mott et al., 1965), presumably because of the irregularity with which shiftworkers are able to attend functions (Pierce et al., 1989). Work by Jamal (1981; 1989), however, suggests that having stable, predictable work hours may facilitate shiftworkers' involvement in organized activities. (Jamal's studies indicated that shiftworkers on fixed schedules had higher organizational participation rates than rotators.)

Because time spent with friends can be scheduled rather flexibly, it might be expected that unstructured (informal) social time would be less affected by shiftwork than structured social activities. Jamal (1982) compared workers on fixed shifts to those on rotating schedules, and found that rotating shiftworkers in a manufacturing plant did spend less time with friends. In the same study, however, they found no difference in time spent with friends for a separate nursing sample. Although the authors did not attempt to account for the conflicting findings, it may be that socialization with friends was more related to gender than shift, as the nurse sample was primarily female, while the manufacturing sample was majority male.

4.5 Work Outcomes

It has been suggested that the incompatibility between shift schedules and opportunities for non-work activities can adversely affect employees' attitudes toward their jobs (Dunham, 1977; Frost and Jamal, 1979; Jamal, 1981). It is also possible that schedules that generate fatigue or other somatic complaints may contribute to unfavourable work orientations, or, ultimately, lead

to increased absences or turnover intentions (Pierce et al., 1989). This section reviews the literature on the relationships between shiftwork and various work outcomes, such as job satisfaction, organizational commitment, work conflict, and turnover intentions.

4.5.1 Job Satisfaction

Research on the relationship between shiftwork and job satisfaction has yielded mixed results, due largely to a lack of comparability between study groups employed. Kundi et al. (1980) compared dayworkers to rotating workers and reported significantly lower job satisfaction for the shiftworking group. Using the "fixed" versus "rotating" dimension, Jamal (1981; 1989) and Jamal and Baba (1992) found lower job satisfaction among nurses on rotating schedules as compared to those with fixed schedules, but were unable to replicate this finding in a manufacturing sample (Jamal, 1981). Dirkx (1993) studied nurses on fixed midnights and found no differences in satisfaction levels when comparing employees on slow vs. swift alternations between nights on duty and time off (i.e., many nights on versus only a few nights on before rest days). Peterson (1985) found no differences in a three-group comparison of job satisfaction among workers on fixed days, afternoons and nights (i.e., found no shift effects when schedules were fixed). Unfortunately, it is difficult to compare Peterson's results to the findings of the other four studies, since he did not include a sample of employees on rotating shifts.

Three studies, on the other hand, have examined job satisfaction among rotating shiftworkers, but had no comparison groups from employees on other shifts. Cunningham (1989) and Williamson, Gower and Clarke (1994) found no difference in job satisfaction between rotating 12-hour shiftworkers and those on rotating 8-hour shifts. Cervinka (1994) found no difference in satisfaction between rotating shiftworkers with a high exposure to night shifts and those with a lower "night shift dose."

Although it is difficult to draw conclusions from such varied approaches to the study of job satisfaction, two general patterns might be observed: (1) there appears to be a lower level of job satisfaction associated with rotating shifts as compared to fixed schedules; and (2) variations in the temporal components of the rotations (shift duration, speed of rotation, etc.) seem to have little effect on job satisfaction. A possible explanation for such observations is that having to work a rotating schedule at all has such a deleterious effect on job satisfaction that minor

alterations in characteristics of the rotation do little to improve work attitudes. Such conclusions are premature, however, without more empirical evidence to demonstrate that rotators are in fact less satisfied than workers on other shifts.

4.5.2 Commitment

A committed employee is one who is loyal and willing to exert extra effort on behalf of the organization (Mowday, Steers and Porter, 1979). Organizational commitment has received very little attention as a dependent variable in the context of shiftwork. Exceptions are Jamal (1981; 1989) and Jamal and Baba (1992) who reported lower commitment among rotating shiftworkers as compared to workers on fixed schedules.

4.5.3 Work Conflict and Stress

Work role conflict can take the form of incompatibility between work demands and one's values, interpersonal conflicts, or conflict between too numerous or too difficult tasks (Rizzo, House and Lirtzman, 1970). Jamal and Baba (1992) found higher levels of job stress, work role overload and role ambiguity among rotating shiftworkers than among workers on fixed shifts. Cunningham (1989), looking only at rotating shiftworkers, reported no difference in job tension between workers on 12-hour shifts and those on 8-hour shifts. Peterson (1985) using a composite measure of work role integration, tension, and intergroup (peer and supervisor) tension, concluded that shift explained very little variance in work conflict scores. His findings indicated that the specific worksite was a better predictor of work conflict than the shift itself. Peterson's conclusions are supported by work by Frese and Semmer (1986) and Cervinka (1993) who argue that relationships between job stress, ill health, and specific characteristics of the work environment (e.g., supervisory and technical support, noise, etc.) are strongly related hold irrespective of shift. (See section 4.6.3.)

4.5.4 Turnover

If shiftwork has negative consequences for employees, then one might expect a greater desire to leave the organization or to switch jobs. The connections between shiftwork and turnover, however, remain unclear. Frost and Jamal (1979), Jamal (1981), and Jamal and Baba (1992) reported lower intent to turn over among samples of nurses and blue collar workers on fixed shifts, as compared to rotators. Cunningham (1989) and Williamson et al. (1994) found no

change in actual turnover rates when workers on rotating 8-hour rosters were compared with those on 12-hour rotations. Zedeck et al. (1983) found turnover intention to be correlated with job dissatisfaction, unhappiness with the work environment, poor mood, and interference with non-work activities. Zedeck et al. concluded that these factors may contribute more to turnover intentions than the shift schedule itself.

4.6 Moderating Variables Reported to Affect Individual, Work-Family, and Organizational Outcomes

Because of the interindividual variability in shift response, a growing trend in shiftwork research is to look for variables other than shift system characteristics that might account for employee responses. The following review provides a brief list of some of the factors thought to moderate the consequences of shiftwork.

4.6.1 Schedule Satisfaction

Shift schedules may be attractive to some employees for personal or family reasons; others may work shift simply because there is no available alternative. The extent to which hours of work mesh with individual preferences and needs is likely to influence both employee work attitudes and the level of disruption experienced in personal life.

The available literature is inconclusive as to whether schedule satisfaction moderates the personal and work-related effects of non-day shifts. Zedeck et al. (1983) found that rotating workers who were satisfied with their work schedules had fewer work absences, higher job satisfaction, better mood and sleep habits, and were more satisfied with time for family and social life than workers who were not satisfied. Morrow et al. (1994) found a significant overall effect of shift preference on a set of work attitudes, including job satisfaction, commitment, and intent to stay. On the other hand, Mott et al. (1965) found that intershift differences in family satisfaction held irrespective of desire to change shifts (i.e., shiftworkers who were satisfied with their shift still reported higher interference with family than dayworkers).

An important contribution of this body of research is the relationships that it reveals between an employee's psychological response (schedule satisfaction) and specific work outcomes (absence, commitment, and turnover intentions). These types of relationships highlight

the importance of "softer" performance indicators (e.g., employee satisfaction) as predictors of work behaviours with direct "bottom line" effects (e.g., absenteeism).

4.6.2 Control

The freedom to make decisions and exercise discretion over work demands has been shown to be related to reduced strain and increased job satisfaction (Karasek, 1979). Only two studies were identified that directly measured shiftworkers' perceived control over work hours (Barton et al., 1993; Voydanoff, 1988). Both indicated that schedule control may ameliorate adverse shift responses.

4.6.3 Work Environment

Specific differences in the work environments between dayworkers and non-day workers (e.g., the level of supervision, technical support, noise, etc.) may also account for some of the conflicting results reported in the literature. Studies examining the effect of work environment on shift response, however, have been few and somewhat divergent in focus, but the available evidence suggests that characteristics of the work environment may be better predictors of attitudes and behaviours than shift.

In a study of work attitudes, Peterson (1985) compared the effect of shift assignment to the effect of working for a particular organization. The best single predictor of work attitudes was the organization for which the employee worked. Shift assignment explained no more than 2% of the variance in work attitudes. Similarly, Shamir (1983), looking at work-nonwork conflict, found that work characteristics accounted for a greater proportion of the variance in conflict than did schedule characteristics. Cervinka (1993) and Frese and Semmer (1986) showed environmental stress factors at work to be good predictors of ill health independent of shiftwork. Finally, Bohle and Tilley (1989) looked at the relationship between social support at work and psychological stress, and found that supervisor support moderated the effect of nightwork.

Whereas it is difficult to draw conclusions from such diverse studies, the tendency for work-related variables to override shift schedules as predictors of work and non-work orientations highlights the need to attend to inherent differences in job context when studying shiftwork. Since shiftwork by definition entails limited schedule flexibility, it may be possible to

reduce some of the adverse effects of shiftwork by altering work characteristics *other* than the schedule per se (e.g., increasing access to resources on non-day shifts, improving supervisor-employee relationships, etc.)

4.6.4 Gender

Although some men may be expressing interest in greater involvement in domestic life, research consistently shows that women continue to bear primary responsibility for household chores and child care (Duxbury et al., 1991; Higgins et al., 1992; Lero et al., 1993; Nock and Kingston, 1985; 1988). The "second shift" (Hochschild, 1989) that may be imposed on women who return from their paid work to a full schedule of housework and child care may make the stress of shiftwork even greater for women. On the other hand, shiftwork may relieve women of some of their domestic responsibilities if it removes them from the home during hectic times, or if a spouse assumes household chores during their absence.

There has been little empirical research that has directly investigated gender-based responses to shiftwork. An exception is work by Pleck and Staines (1985), which indicated that shiftwork significantly increased work-family conflict, but only for men. Women on non-day shifts had conflict levels similar to those on day shifts. Pleck and Staines speculate that there may be an element of selection operating on women who work in jobs that generate high conflict with family responsibilities, whereby women with high work-family conflict withdraw from the labour force or move to jobs more compatible with family life. Pleck and Staines conclude that work-family conflict may be underestimated for female shiftworkers, as the population surveyed may include only those with satisfactory work-family adjustment.

Kingston and Nock (1985) found significant gender differences in the division of labour and the allocation of time associated with the length of the "family work day" (a combined measure defined as the amount of time in which at least one spouse is at work). Longer family work days (i.e., instances where spouses work opposing shifts) increased pressures and domestic responsibilities only for women. For women, longer work days were associated with more time in chores, greater work-family interference, less time with spouse, and a sense of having less free time than needed. None of these outcomes were significant for men.

Although clear relationships between gender and shiftwork remain to be demonstrated, the literature does lend support to the notion of a gender-based division of labour. It seems that wives may be responsible for family coordination irrespective of their spouse's work schedule or their own employment status (Charles and Brown, 1981; Hertz and Charlton, 1989; Nock and Kingston, 1988).

4.6.5 Parental Status

Although married workers without children may well have "family responsibilities", such as chores, errands, and commitments to a spouse, research shows that the perceived pressures from the home domain are lower for childless couples than for parents (Higgins et al., 1992). Shiftwork, therefore, might be expected to be more challenging for parents than for non-parents.

Unfortunately, no shiftwork studies were identified which compared parents to non-parents on relevant work-family outcomes. Prevalence data reported by Statistics Canada, however, suggest that women with young children tend not to work irregular shifts (see Section 2.4.2). This trend is consistent with a small study by Charles and Brown (1981) which showed that shiftworking mothers with young children tended to be concentrated in part-time afternoon or fixed night schedules, and were in the minority in split or rotating shifts. Whether mothers deliberately avoid unpredictable work schedules (or simply work other shifts by chance) has not been empirically demonstrated.

4.7 Critique of Shiftwork Literature

Although the preceding review reveals a vast literature, the relationships between shiftwork and the ability to balance work and family remain unclear. It is surprising, given that this line of inquiry has been active since the turn of the century, that so few conclusions can be drawn. There are several possible reasons that research on the work-family effects of shiftwork has remained in an "embryonic" stage.

First, the effects of shiftwork have seldom been studied under a work-family "template". Several useful scales have been developed over the past 15 years to access constructs associated with work orientations and the inability to balance work and family. There is a paucity of research, however, that has applied these measures in a shiftwork context. Instead, shiftwork

research seems to have evolved in tandem to the work-family approach to studying non-standard work arrangements. Early recognition of the adverse health effects of non-day shifts seems to have spawned and sustained a literature that has traditionally focused on individual biological and psychological functioning and the implications of impaired functioning for workplace safety and job performance (cf. Monk and Folkard, 1992). Reexamination of both work orientations and work-family outcomes through the use of standard work-family measurement scales might contribute to a better understanding of the effects of shiftwork.

A second explanation for there being scant evidence of work-family outcomes is the lack of comparability between studies due to research design. Practical and methodological limitations frequently mean that shift categories are combined in ways that preclude comparison from study to study (e.g., some studies compare fixed shifts to rotating; others compare day to non-day, etc.). The ideal classification would recognize two dimensions of shift schedules: the particular time of day worked (day, afternoon, night), and the rotational characteristics of work hours (fixed or rotating).

Third, there are few studies that have collected data on possible moderating influences that may also contribute to orientations toward shiftwork. The degree to which shiftwork is perceived to interfere with family or social life is likely dependent on an employee's personal needs and lifestyle and the level of responsibility he or she holds both inside and outside of the workplace. Consideration of potential moderators, such as gender, parental status and work environment, therefore, is essential.

Finally, the samples employed in the shiftwork literature have been drawn from a limited, fairly traditional variety of shiftworkers, notably nurses and factory workers. There seems a need to examine employees in occupations more representative of shiftworkers of the '90s, particularly in the growing service sector.

5. Research Questions and Methodology

5.1 Methodological Requirements

The preceding critique of the literature identified four methodological requirements for a meaningful examination of shiftwork within a work and family context: (1) requirements pertaining to *measurement*; (2) requirements involving the *definition of shift categories*; (3) recognition of *potential moderators* of shift response; and (4) *sample* requirements. This research was designed to address these four requirements as follows:

1) ***Measurement*** For greater comparability of results, standard measurement scales currently in use in other branches of the work-family literature were employed.

2) ***Definition of shift categories*** Shift categories were designed to remain sensitive to the rhythms of social and family life. Since the literature reviewed for this research had indicated that availability during the dinner hour and early evening was critical to family and social interactions, 6 pm was used as a cutoff to define a day shift. Although the ideal classification would have employed four study groups as defined in Section 2.2 (fixed day, fixed afternoon, fixed midnight, and rotating schedules), such a variety of schedules was not available within the participating organization. The following two shift assignments, therefore, were studied in this research:

> ***Daywork:*** a daytime schedule which rotates through a variety of day shifts, *the latest of which ends by 6pm* (e.g., 7am to 3:30pm, 9am to 5pm, 10am to 6pm, and similar variations ending before or at 6pm). Although the precise time of arrival and departure varies, employees in this shift assignment are able to predictably spend the dinner hour and early evening at home.
>
> ***Rotating Shiftwork***: a schedule which rotates through a variety of shifts, and which encompasses *at least one shift which extends beyond 6pm.* This category includes both employees with 3-shift rotations (mornings, afternoons, midnights), and those with 2-shift rotations (e.g., alternations between days and afternoons, but no midnights). Employees in this shift assignment, therefore, do not routinely have their evenings free.

Readers will note that both of the final study groups consisted of rotating workers, but with a much narrower bandwidth for the daywork category.

3) ***Potential moderators*** of shift response were incorporated in the research methodology. *Gender* and *parental status* were taken into account through the use of data analysis procedures which allowed for the examination of the independent effects of these factors on the dependent variables under study. *Work environment* was controlled in two ways: by using job type as a surrogate for various work context factors (career employees were distinguished from those in non-career tracks to control for any preexisting differences in terms of job content, autonomy, performance expectations, etc.); and by surveying a single organization. Sampling a single organization has been recommended as a means of controlling for a variety of confounds (e.g., organizational culture, extraorganizational environments, etc.) through elimination (Bausell, 1994). Finally, *schedule preference*, *schedule control*, and *work-family control* were also measured and reported in order to assess these potential sources of individual variability in shiftwork response.

4) ***The sample*** of employees was drawn from a modern service industry felt to be more representative of shiftworkers of the '90s.

5.2 Research Questions

5.2.1 Questions for the Quantitative Analysis (Survey Study)

The following research questions (1 through 3) were addressed through a pencil and paper survey of a sample of men and women working in an organization in a modern service industry in Western Canada.

Question 1

a) What are the relationships between shift assignment (daywork versus rotating shiftwork) and:

- individual outcomes (stress , life satisfaction);
- work-family conflict (role overload, interference from work to family, interference from family to work);
- the ability to manage non-work time (individual time management, family time management);
- work outcomes (organizational commitment, job satisfaction, work stress, intent to turnover)?

b) Does the effect of shift assignment differ as a function of gender or parental status?

Question 2

a) What are the relationships between shift assignment (daywork versus rotating shiftwork) and:

- perceived control over work scheduling;
- perceived control over work-family balance?

b) Does the effect of shift assignment differ as a function of gender or parental status?

Question 3

a) What is the relationship between shift assignment (daywork versus rotating shiftwork) and preferred work schedule (i.e., do rotating shiftworkers differ from dayworkers in terms of the extent to which they find their shift assignment appealing)?

b) Does schedule preference differ as a function of gender or parental status?

5.2.2 Questions for the Qualitative Analysis (Interview Study)

The literature reviewed for this research also suggested that shiftwork may serve different purposes for women than it does for men, particularly for mothers who may wish to balance their work schedules with the schedules of husbands and children. As a preliminary exploration of some of the personal, family, social, and organizational factors that may underlie women's response to shiftwork, the remaining research questions (4 through 7) were addressed through structured telephone interviews with a subsample of mothers on rotating shifts:

4. Why do mothers who work rotating shifts work the schedules that they do?

5. What do mothers who work rotating shifts perceive to be the advantages and disadvantages of their work schedules?

6. What type of support is available to shiftworking mothers in the workplace?

7. What would shiftworking mothers like from their organization in the way of support?

5.3 Method

5.3.1 The Company

The participating organization was a large service-oriented company in Western Canada with an employee population of roughly 10,000. Five departments were surveyed. The departments and hours of operation as identified by the company were as follows: technical and repair (7am to 10 pm); retail (8am to 9pm); operator services (24 hours); customer service (7am to 8pm); and telesales (8am to 1am). Contacts within the organization indicated that all employees who worked within a shiftworking department worked some variety of rotating schedule (i.e., fixed shifts were not available among shiftworking departments in this organization).

5.3.2 The Survey Study

5.3.2.1 The Survey Sample

Questionnaires were randomly distributed via internal mail to 1,662 male and female employees working in the organization's five shiftworking departments. This represented roughly half of the population of shiftworkers in the organization. A total of 511 questionnaires were returned, representing a response rate of 31%. The final study sample by shift, gender and parental status is described in Table 7[1].

5.3.2.2 The Survey Measures

A 14-page questionnaire was distributed to all study participants. Well-established measures from the work-family literature were used to operationalize constructs of interest. Constructs included two individual outcomes (stress, life satisfaction), three work-family conflict outcomes (role overload, interference from work to family, and interference from family to work), two time management outcomes (individual time management and family time management), and four work outcomes (organizational commitment, job satisfaction, work stress, intent to turnover). Descriptions of these scales, as well as descriptions of the scales used to measure

[1] Several shift and job type categories in the original sample were too small for analysis. In order to obtain shift groupings that were as homogeneous as possible, some responses were deleted from the analysis. The final study sample consisted of 272 employees, all of whom worked in non-career tracks. Refer to the original thesis(Johnson, 1997) for details.

potential moderating variables (schedule preference, schedule control, and control over work-family balance), are provided in Appendix B).

5.3.2.3 Survey Data Analysis

Data analysis for Question 1 was performed using a series of 2 X 2 X 2 multiple analyses of variance (MANOVAs). MANOVA allows the researcher to explore the effect of a given factor on a *set* of related variables. Three sets of dependent variables were used: *individual outcomes* (stress, life satisfaction); *work-family conflict* (overload, work interferes with family, family interferes with work); and *work outcomes* (organizational commitment, job satisfaction, work stress, intent to turnover). Following a significant MANOVA, univariate F tests were conducted using a Bonferroni adjustment (dividing the overall alpha of .05 by the number of dependent variables in the variable set). This followup allows the researcher to determine which variable in the set contributed to the significant multivariate effect.

The effects of three factors (shift, gender, and parental status) were explored in each of the MANOVAs described above. MANOVA provides information on the interactions between factors of interest (e.g., a significant shift-gender interaction on the work outcome test means that shiftwork has a differential effect on work outcomes depending on the employee's gender). When an interaction is *not* significant, MANOVA provides a means of testing for the independent main effects of each factor. All (combinations of) interactions were tested.

Time management was assessed by two analyses. Individual time management was analysed for the entire sample by means of a 2 X 2 X 2 analysis of variance (ANOVA), with shift, gender and parental status as the independent variables (factors). Because family time management items applied only to parents, a separate 2 X 2 ANOVA was conducted for parents only, with shift and gender as independent variables. All interactions were tested.

Question 2 was addressed by a series of 2 X 2 X 2 ANOVAs to test for group differences on each of two response variables (*schedule control, work-family control*). Independent variables consisted of shift, gender, and parental status. All interactions were tested.

Question 3 (*schedule preference*) was addressed by dichotomizing the 5-point rating scale used to measure the personal appeal of a selection of work schedules (see Appendix B for a description of the original measure). Individuals who rated the appeal of their current schedules as a 4 or 5 on this scale were considered to have high schedule preference. Those rating their schedules 3 or lower were considered to have low preference for their current schedules. Chi square analysis was then performed for each of the 8 employee groups categorized by shift, gender, and parental status .

5.3.3 The Interview Study

On the last page of the shiftwork questionnaire, respondents were asked whether they would be willing to be interviewed by telephone. This item was used to generate a list of names from which to create a telephone interview sample. Sixty-five parents from the initial survey offered to be interviewed.

5.3.3.1 The Interview Sample

In order to obtain insight into the unique circumstances affecting shiftworking parents today, interview questions were designed to pertain to workers with children. Of the 65 interview volunteers, 29 were rotating shiftworkers. Unfortunately, there were too few male volunteers to allow the construction of a separate study group of shiftworking men with children. It was decided that the sample of interviewees would be limited to the 24 female respondents. Interviews were conducted by a same-sex interviewer and tape recorded with permission.

5.3.3.2 The Interview Measures

Interviews followed a structured script composed of open ended questions. Refer to the research questions (Section 5.2) for the general topics covered in interview. The full script is appended in the original thesis (Johnson, 1997).

5.3.3.3 Interview Data Analysis

Interviews were analyzed using content analysis (Jones, 1985; Kassarjian, 1977; Krippendorff, 1980). The coding scheme was developed by the author, and an experienced coder was recruited to code the interviews. Data were tabulated as percent response per category using SPSS.

6. Questionnaire Survey Results

This section presents the results of the questionnaire survey. First, the survey sample is described with respect to demographic characteristics (for more detail on sample demographics, refer to the original thesis (Johnson, 1997). A second part presents the results of the analyses of the effects of shift assignment on individual, work-family, and work outcomes, with separate consideration of the independent effects of gender and parental status (Research Question 1, Section 5.2). Part three presents the results of the analyses of the effects of shift assignment in terms of schedule preference and control (Research Questions 2 and 3). The section concludes with a summary of the survey findings.

6.1 Sample Characteristics

6.1.1 Shift, Gender, and Parental Status

Table 7 presents data on the questionnaire survey respondents, grouped by shift, gender, and parental status. Fifty-five percent of the sample worked rotating shifts; 45% worked days. Rotating shiftworkers and dayworkers were roughly similar in terms of their distribution by gender and parental status. The rotating shiftwork group had a somewhat higher proportion of women (69% female versus 63% for the daywork group), and parents. (57% of the rotating shiftworkers had children under 18 versus 49% of the daywork group.)

6.1.2 Age

Age data (not shown) indicate a tendency for the dayworkers in this sample to be older than the rotating shiftworkers. This pattern held across both gender and parental status, and suggests that daywork at this organization may be "earned" through seniority.

Among non-parent groups, intershift differences existed for women, but not for men. Over 50% of men without children were 45 or over, irrespective of shift assignment. Among women without children, dayworkers were concentrated in the 35-44 year age range, but rotating shiftworkers showed a strongly bimodal distribution: women without children on rotating shifts were concentrated both in the younger age ranges under 35 (40% were in these younger ranges), and in the older ranges 45 or over (40% in the older ranges as well).

6.1.3 Age of Children

The age range of children in the family was important to this research as the presence of preschool-aged children has been shown to be associated with increased child care demands in the household (Lero et al., 1992). In this sample, fathers were much more likely to have preschool aged children than were the mothers surveyed (45% of fathers had at least one child under 6, versus 28% of mothers). The gender difference was particularly marked for the rotating shiftwork groups: 48% of fathers on rotating shiftwork had children under 6 years of age, compared to only 25% of mothers on rotating shifts. Dayworkers showed a less dramatic gender difference in terms of the age of their children. (42% of dayworking fathers had at least one preschooler, versus 32% of dayworking mothers.) The observation that comparatively few mothers with very young children were represented in the rotating shiftwork group suggests that mothers with children in this age range may find rotating shifts incompatible with their child rearing demands.

6.1.4 Reasons for Current Schedule

Table 8 presents data on the reasons respondents cited for working their current schedules. Irrespective of shift assignment or parental status, roughly 90% of men indicated that they worked their current schedules because it was a job requirement. Among women, however, the reasons given for working their current schedule varied according to both shift and parental status. Mothers who worked days tended to do so for family responsibilities. (58% of dayworking mothers said they worked their shift due to family responsibilities, compared with only 15% of mothers on rotating shifts.) Mothers who worked rotating shifts did so because of job requirements. (84% cited this as the reason for their current schedule, compared with only 36% of mothers on days.) These data suggest that women on rotating shifts in this sample did *not* choose shiftwork as a means of facilitating work-family balance, but because the job demanded it.

6.1.5 Work Hours

Daywork in this sample appeared to be associated with reduced work hours for women, but not for men. Men in all study groups (i.e., irrespective of shift and parental status) averaged 38 hours per week. On the other hand, women's work time was related to both their shift assignment and the presence of children. Work hours were longer for women on rotating shifts,

as compared to their dayworking counterparts, and this was especially true for women without children: women without children on rotating shifts averaged as many hours as did the men in the sample (38 hours per week); women without children who worked days averaged only 35 hours. Irrespective of shift, mothers worked fewer hours than did their counterparts without children. Mothers on rotating shifts averaged 35 hours per week. Mothers on days reported the lowest number of work hours of any of the women surveyed, averaging 31 hours per week.

The gender differences in the work hour data suggest that women in this sample are working part time, whereas men are not. The tendency for women to work part time is consistent with labour force data which indicate that part-time work is largely the domain of women (it is estimated that 1 in 4 women work part time, as compared to an incidence of 1 in 25 among men; McKie, 1992). However, the fact that women on rotating shifts worked longer hours than their counterparts on days suggests that part-time work may be *less* available to rotating shiftworkers in this sample than it is to dayworkers. This pattern would be contrary to what is seen in the labour force in general, where part-time work appears to be *more* available on non-day shifts than on days (see Section 2.6). Combined, these patterns suggest that mothers working shift in this sample cope not only with changing work schedules, but also with longer work hours than mothers who are able to work days.

6.1.6 Organizational Tenure

Respondents in this sample were generally long-standing employees. Fifty to ninety percent of the sample had been with the company for 10 or more years. Like the age data presented earlier, tenure data also support the notion that daywork at this organization is "earned". Over 90% of dayworkers in the sample had 10 or more years with the company, irrespective of gender. Only 50% to 75% of rotating shiftworkers, on the other hand, had been with the organization for 10 or more years.

6.1.7 Full-time/ Part-time Status

Gender differences in full-time/part-time status mirrored the work hour data presented earlier. Virtually all of the men in this sample worked full time irrespective of shift assignment or parental status. For women, the tendency to work part time appeared to be linked to shift assignment. Women who worked days were more likely to report part-time hours than were their

counterparts on rotating shifts. Although this intershift difference pertained to both mothers and women without children under 18, mothers on days were especially likely to work part time. (38% of mothers on days worked part time, compared to only 14% of their counterparts without children.)

6.1.8 Department

There was evidence of gender segregation with respect to the type of work performed. Over two thirds of the men surveyed worked in technical and repair positions (T&R), compared with less than 5% of the women. Women in the sample tended to work in customer service (CSRs), operator services, or retail positions. Women on rotating shifts were heavily concentrated in CSR positions. (Roughly 55% of women on rotating shifts were CSRs.) Dayworking women were more evenly distributed across departments. (Roughly 40% of dayworking women were operators; 38% worked in retail; and roughly 20% were CSRs.)

The relationships between department and shift assignment in these data suggest that schedules are determined largely by the business demands of the unit for which employees work. In addition, the different departmental distributions of rotating shiftworkers versus dayworkers should be borne in mind when interpreting the intershift differences observed in the following data analysis.

6.2 Results of Survey Data Analysis

Following are the results of the data analyses described in Section 5.3.2.3. Main effects are identified for shift, gender, and parental status, and interactions are reported where applicable. Readers interested in more statistical detail are referred to the original thesis (Johnson, 1997).

6.2.1 Individual Outcomes

Results of the analysis of individual well-being (stress and life satisfaction) identified a significant main effect only for gender. (Women reported significantly lower well-being than men.) Univariate follow-ups indicated that the gender effect was attributable to the significantly higher stress reported by women in the sample. Shift and parental status were unrelated to individual outcomes.

6.2.2 Work and Family Outcomes

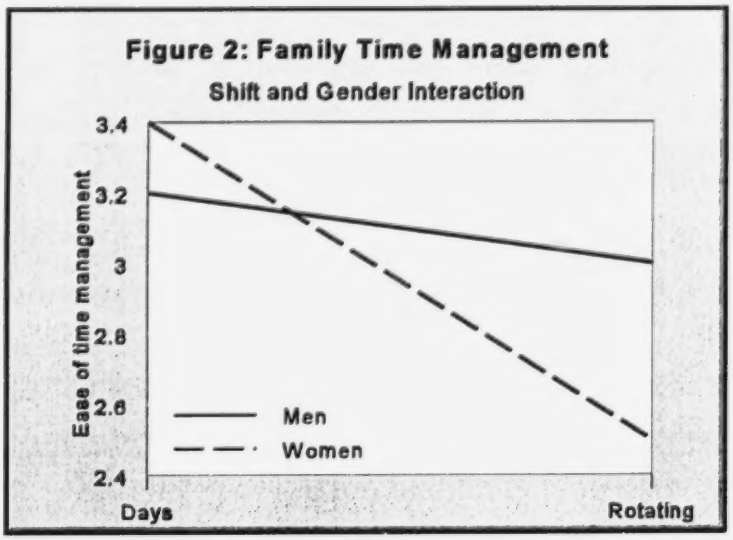
6.2.2.1 Work-Family Conflict

The analysis of work-family conflict (overload, family interference with work, work interference with family) identified a significant main effect only for shift. (Rotating shiftworkers experienced significantly greater conflict than did dayworkers.) The significant shift effect was attributable to the high level of interference from work to family experienced by the rotating shiftwork group. Gender and parental status were unrelated to work-family conflict.

6.2.2.2 Individual and Family Time Management

The analysis of individual time management yielded significance for all three main effects: rotating shiftworkers experienced significantly more difficulty managing their individual time than did dayworkers; women experienced significantly greater difficulty than men; and parents experienced more difficulty than non-parents.

The analysis of family time management resulted in a significant interaction between shift and gender, so precluded further statistical analysis. A plot of the interaction (Figure 2),



however, indicated that rotating shiftwork was associated with greater difficulty in family time management for both men and women in the sample (i.e., the effect was in the same *direction* for both mothers and fathers). The *magnitude* of the difference, however, was far greater for women (i.e., shiftwork interfered more with family time management among mothers than it did among fathers).

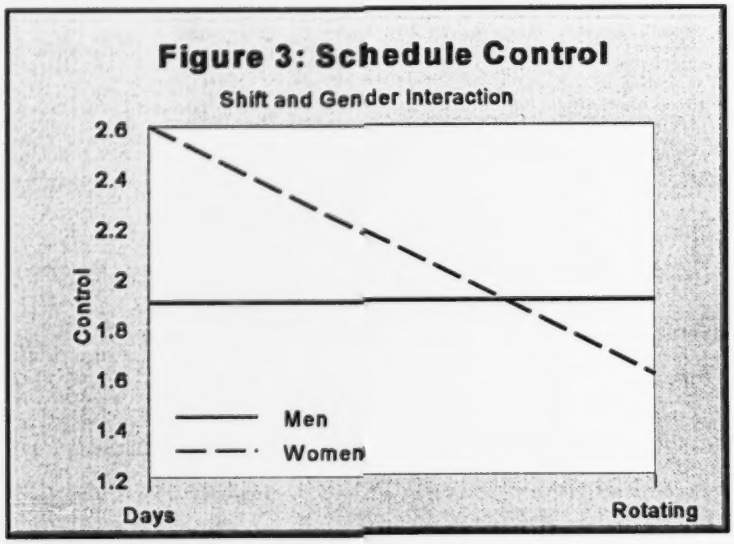
6.2.3 Work Outcomes

Only shift had a significant main effect on employee work orientations (job satisfaction, job stress, organizational commitment, and intent to turnover). Univariate follow-up indicated that rotating shiftworkers experienced significantly lower job satisfaction than dayworkers. Work outcomes were unrelated to gender and parental status.

6.2.4 Perceived Control

6.2.4.1 Control over Work Scheduling

A gender-shift interaction was also obtained in the schedule control analysis. A plot of this interaction (Figure 3) revealed that rotating shiftwork reduced schedule control among women, but not among men. It is important to note that schedule control was rather low for all groups. The highest rating for any study group was a mean of 2.6 on this 5-point rating scale (reported by mothers on day schedules).



6.2.4.2 Control over Work-Family Balance

Only shift was related to work-family control. Rotating shiftworkers reported significantly lower control over the work-family interface than did dayworkers. Again, it is important to note that perceived work-family control was low to moderate for all groups. And again, the highest level of control was reported by mothers on day schedules (whose mean was 2.6 on this 5-point scale).

6.2.5 Preferred Work Schedule

Rotating shiftworkers, irrespective of gender and parental status, were significantly less satisfied with their work schedules than were dayworkers. Only 10 to 15% of rotating shiftworkers rated the appeal of their current schedule as highly satisfactory, compared with 75 to 95% of dayworkers.

6.3 Summary

Demographic data presented in this section reveal two trends relevant to evaluating the effects of shiftwork. First, women on rotating shifts in this sample were notably different from their male counterparts in terms of work demographics, family demographics, and their reasons for working shift. The "typical" woman on rotating shifts was a customer service representative working roughly 36 hours per week. The "typical" man on rotating shifts worked in T&R and averaged 38 hours per week. Men on rotating shifts were more likely than their female counterparts to have children at home, and were twice as likely to have preschool age children. In spite of their apparently heavier child-rearing demands, however, men's work hours and reasons for shiftwork were largely unrelated to their parental status: virtually all of the men in this sample worked full time, and said that they worked the schedule they did because it was part of the job. Women's reasons for working shift were strongly linked to their shift and work hours. (Women on days tended to say they worked days in order to meet family responsibilities, whereas the vast majority of mothers on rotating shifts said they worked shift because it was required by the job.) These data, therefore, tend to refute any suggestion that parents in this sample have "chosen" rotating shiftwork as a means of helping them balance work and family.

The second pattern evident in the demographics of this sample was an indication that daywork was "earned' through seniority. Rotating shiftworkers were younger than the dayworkers surveyed, and had much lower organizational tenure. This pattern provides further evidence that rotating shift schedules generally are not "chosen" by employees in this organization. "Earned" daywork is also consistent with the tendency for shiftworking women to say that they worked the schedule they did because it was a job requirement (i.e., if new recruits accept rotating shiftwork as a way in to the organization, and then move into daywork as it becomes available).

Statistical analyses of the outcome data were consistent with these patterns in suggesting that shiftwork interferes with employees' personal lives. Rotating shiftworkers experienced significantly greater work-family conflict than dayworkers, and difficulties in individual time management. The low levels of work-family and schedule control reported by shiftworkers suggest that rigid time demands may have been one of the factors contributing to elevated work-family conflict among the rotating shiftwork groups. Such problems are consistent with a work environment where shiftwork "comes with the territory," and where inflexible work hours impinge on personal time.

As expected, given their high level of perceived conflict between work and family, their low schedule control, and their general dissatisfaction with their work schedules, rotating shiftworkers held significantly less favourable work orientations than did dayworkers. Although it is tempting to attribute this observation to a reaction to rotating shifts per se, the finding should likely be interpreted with caution. Since schedules tended to be linked strongly to department, satisfaction with specific facets of the job may have been a function more of departmental differences than of shift differences.

Combined, demographic and statistical data suggest that rotating shiftwork may pose problems for both men and women in this sample. Women on rotating shifts, however, may experience some of the greatest pressures, due to heavy stress, low control, and greater difficulty in individual time management. The next section draws on personal interview data to take a closer look at the unique challenges faced by shiftworking women in this organization.

7. Interview Results

The interactions between shift and gender in the questionnaire survey analyses suggested that the integration of work and family was particularly difficult for shiftworking mothers in this sample. This section of the report addresses Research Questions 4 to 7 (Section 5) by targeting this group in order to obtain a more detailed look at some of the personal, family, social, and organizational factors that may have contributed to the difficulties experienced by these women. The data were collected by means of telephone interviews conducted with 24 women on rotating shifts who were mothers of children under 18 (see Section 5.3.3 for details on the interview sample).

7.1 Sample Characteristics

Generally, the interview respondents were demographically similar to mothers on rotating shifts in the larger survey (not shown), except: (1) they had younger children (42% of the interview respondents had preschool-aged children under 6, compared with only 25% of shiftworking mothers in the survey); and (2) they worked somewhat longer hours (the average work week was 37 hours, slightly higher than the mean of 35 for shiftworking mothers in the survey sample.

7.2 Reasons for Shiftwork

Respondents were first asked "Why did you initially choose a job requiring shiftwork"? The responses were fairly evenly distributed among three categories (Table 9). One third of the sample indicated they chose rotating shiftwork because it was the only way in to the company ("they're not hiring for anything with straight days-- if you want to work here, you work shift"). One third thought the pay was above average. ("This work pays good money for someone with my background.") One fifth of the sample said that they did *not* choose shiftwork, but had started on days-- shiftwork had been introduced later when the office hours changed (over half of the respondents had been on straight days immediately before beginning their current schedule).

Although the reasons for choosing shiftwork were varied, perhaps the most important observation to be made from this item was that no one indicated they had chosen rotating shiftwork because they found the *schedule* appealing. In fact, when asked "If a similar job

became available at a comparable rate of pay but with straight days, would you take it?", 83% of the respondents said "yes." Thirty-three percent said they might take a job with fewer hours if it were available.

7.3 Advantages and Disadvantages of Shiftwork

Respondents were also prompted to look for costs and benefits in four particular areas of their lives: economic aspects, work-related aspects, home-related factors, and social life.

7.3.1 Advantages

Table 10 presents the advantages cited by respondents. The number one advantage was economic: over half (54%) of the respondents mentioned the shift differential associated with evening hours. One quarter of the sample (25%) indicated that their shift reduced their daycare costs.

The next largest category of advantages was in the home domain. Forty-two percent of respondents felt they could shop and run errands during non-peak hours. A third area in which respondents were able to identify advantages of shiftwork was in their work lives. Thirty percent of the sample thought that there were advantages in terms of the relaxed atmosphere at work; 13% preferred the client group on the late shift. ("During the day you have the business clients who are always so demanding-- at night things are quieter, it's more personal service.")

Advantages in terms of social life were very few. A small minority of respondents (17%) felt they could visit with friends early in the day when they worked a late shift. For the most part, however, respondents were unable to identify any social advantages from having to work shift (67% of the sample said there were no advantages). In fact, one in five respondents answered this item with the reply, "Advantages in my social life? What social life?"

7.3.2 Disadvantages

Table 11 presents a summary of the disadvantages associated with shiftwork. Primary disadvantages were related to home and social life. At home, respondents missed their children: 46% of respondents said they seldom saw their children on the late shift ("By the time I get home, everybody's in bed... I can go all week without seeing my kids when I'm on lates."); 30% said they missed having the dinner hour to spend with the family. Disadvantages in social life revolved

around having to miss functions that were typically scheduled with the dayworker in mind: 46% of respondents said it was difficult to attend parties and events in the early evening. ("I always miss the special dinners and birthdays, sometimes I miss Christmas dinner.")

There was little downside in terms of work life or economic factors. The only economic disadvantage to surface was the cost associated with take-out food (21% of respondents mentioned the family spent more on take-out when they worked lates). There were also very few disadvantages related to work. Although a few respondents mentioned fatigue or inadequate back up and support on the evening shifts, overall, the majority (63%) felt there were no particular disadvantages to shiftwork in terms of their work life.

7.4 Support in the Workplace

In the last part of the interview, respondents were asked to identify the kinds of support they felt they received from their coworkers, their supervisors, and from the company itself.

7.4.1 Coworker Support

Table 12 summarizes respondents' perceptions of the types of support provided to them by coworkers. The primary source of support centred around their coworkers' willingness to trade shifts: 58% of interviewees said their coworkers made shiftwork easier by trading shifts when they were asked; 21% felt a sense of camaraderie with other staff at work. ("We're all in the same boat, we all help each other out.") A high level of mutual support was also evident in the finding that the vast majority of respondents (83%) said they could think of nothing their coworkers did that made it more difficult to work shift.

When asked what they would like from their coworkers in the way of support, most respondents (79%) said there was nothing more they needed from them. There seemed to be a sense that there was really little their coworkers *could* do to make shiftwork easier: "We all do our best-- the schedule gets posted and it's sort of a 'scratch my back and I'll scratch yours' thing. Beyond trading, there's little else they can do."

7.4.2 Supervisor Support

Table 13 provides data on perceived and desired support from supervisors. The results are strikingly similar to the coworker items. The only supportive behaviour mentioned was again related to trading: 17% of respondents said their supervisors were responsive to trade requests. ("Oh, she's great-- if I really need time off, she's fine with that as long as I can find someone to cover me.") The only non-supportive behaviour cited was in reference to supervisors who were *not* responsive to trading: 17% of respondents said their supervisors were inflexible about trades.

Also much like the coworker items, there was a sense that the supervisor's hands were tied anyway. Over 90% of respondents said there was nothing they really wanted from their supervisors; nearly 50% said there was nothing the supervisor *could* do. ("It's not really within her control to help;" "Scheduling is a complicated business done at a much higher level.")

7.4.3 Organizational Support

Table 14 provides data on perceived and desired support at the level of the company. Even when asked to examine supports at the organizational level, the dominant theme was trading: 30% of respondents thought the organization made shiftwork easier by allowing trades. The only barrier cited was the requirement that employees find their own replacements. ("Sometimes you have an emergency just like anybody. They'd never ask a nine to fiver to find a replacement for herself. Because we can trade, they figure we should never miss a day.")

In terms of what support they would like to have, responses revolved around flexibility, more input into scheduling, and earlier schedule postings. ("We could work some of it out;" "When scheduling is done at such a high level, they haven't a clue what our needs are.") Only 17% of respondents could think of nothing they wanted from the company in the way of support.

7.5 Summary

Although findings based on so small a sample cannot be generalized to the broader shiftworking population, the results of the interview study provide a glimpse of some of the possible contributors to work-family conflict among shiftworking mothers in this organization.

First, it seemed that the majority of women in this group worked shift because it "came with the job." In fact, one in five women had never actually chosen shiftwork at all, but instead, had been moved into it in response to business demands. Most importantly, none of these women had chosen rotating shiftwork because they found the work hours attractive. These findings provide no support for the suggestion that women may choose non-day work hours as a means of integrating their work and home lives.

On the contrary, *interference* with home and social life, especially time with children, was the primary disadvantage of shiftwork. Although many women were able to identify at least some advantage to shiftwork (such as the shift differential, a more relaxed work atmosphere, and the ability to shop and run errands during the day), evidently, the disadvantages far outweighed these few benefits: over 80% of respondents said they would gladly accept a day job if one became available.

In terms of work life, there appeared to be little in the way of either advantages or disadvantages associated with shiftwork. Again, there seemed to be a sense that shiftwork just "came with the territory." Instead, these women appeared to accept the inevitability of shift scheduling, and coped by banding together informally to trade off shifts that were problematic to them. Only a small minority of women, however, felt that nothing *could* be done to help them. There appeared to be frustration that scheduling was done outside the unit through an involved, bureaucratic process that more or less "steamrolled" them into their shift assignments. These comments were reminiscent of the low level of schedule control reported by women in the survey data. These data indicate that lack of control over work scheduling may be creating substantial problems among shiftworking women in this organization. Interview data suggest that what these shiftworkers want most from the company is more flexibility in scheduling, more input into scheduling, and schedules that are posted further in advance. The high level of interest in daywork and the substantial contingent of interview respondents who found the idea of reduced hours appealing also suggests that a part-time or job-share option might be attractive to these mothers.

8. Conclusions and Policy Implications

This study of a group of men and women working in a modern service industry has allowed us to reexamine the effects of shiftwork in a context more representative of shiftwork in the '90s. The results of the research reveal not only how much has changed in the shiftworker's work and home life since early shiftwork studies were conducted, but also how much has remained the same.

As implied in the review of labour force trends, what has changed is the face of the shiftworker. Demographic data on the organization surveyed for this research indicated that two thirds of the respondents from shiftworking departments were women. Over half of the sample (both male and female) had children under 18 at home. Shiftworking women were much less likely than their male counterparts to have preschool aged children, providing some support for the notion that women with high child rearing demands may be "self selecting" out of shiftwork (Charles and Brown, 1981; Nock and Kingston, 1988). Combined, these data suggest considerable pressures on today's shiftworker in terms of family responsibilities.

What hasn't changed is the workplace's ability to accommodate the personal needs of shiftworkers. First, scheduling in this organization was evidently structured around a traditional seniority-based system. Demographic and interview data indicated that shiftwork was assigned largely to new hires, with advancement to day shifts "earned" through years of service. Although it may seem somewhat equitable to have everyone "pay their dues" in this manner, such preferential scheduling means that rostering is necessarily done without an eye to individual preferences and needs. As a result, those employees most in need of flexibility (i.e., young workers with families) are least likely to obtain it. In addition, the input of the shiftworkers themselves (who can perhaps best reconcile the unit's unique business demands with staff's scheduling needs) is lost.

Second, shiftwork in this organization showed the same rigid time and place constraints that shiftwork has traditionally imposed on employees. In spite of suggestions that shiftwork may increase flexibility for employees trying to blend work and family (Finn, 1981; Presser, 1986), shift scheduling in this organization was clearly still "business-driven" (Pierce et al., 1989). Work schedules were determined in advance in order to meet the particular staffing needs of a variety of

units with a variety of hours of operation. Although no one would argue against the need for customer-responsive business hours, all scheduling appeared to be done at such a high organizational level that the needs of the units' particular employees were invisible to those doing the scheduling.

As a result, lack of control over work hours was a recurring theme throughout this research. Scaled scores from the survey results suggested that rotating shiftworkers perceived a very low level of control over their work scheduling, and reported significantly less control over the work-family interface than did dayworkers. When asked what they would most like from their employer in the way of support, again, interview respondents wanted more control and more input into their work scheduling.

High pressures from the work and home domains combined with low control over work hours likely contributed to many of the shift effects observed in this research. Shiftworkers experienced significantly greater work-family conflict than dayworkers and reported significantly more difficulty managing their individual time. Interview data suggested that shiftwork also interfered with participation in social pursuits and shut employees out of activities requiring a fixed time commitment. Not surprisingly, shiftworkers had significantly poorer work attitudes (particularly in terms of job satisfaction) than did the dayworkers surveyed, and were significantly less satisfied with their work schedules. Given the choice, the vast majority simply would have preferred to work days.

Some of the independent gender effects observed in this research suggest that changes have been slow on the home front, as well. Work-family literature has consistently shown that, in spite of their additional responsibilities in the paid work force, women have retained their roles as primary caregivers in the home (Duxbury et al., 1991; Higgins et al., 1992; Lero et al., 1993; Nock and Kingston, 1985; 1988). Findings from this research support this contention. Women reported significantly greater stress than the men surveyed, and greater difficulty managing their individual time.

Examination of some of the gender-shift interactions (an increase in family-time management problems among women on shift, but not among men) also suggests that an imbalance in the division of household responsibilities may be contributing to a differential (gender-based) response to shiftwork. As suggested by Charles and Brown (1981), women can work shift without any challenge to stereotyped roles within the family. Evening work in particular can allow women to add to the family's income, while maintaining their roles as primary caregivers. As expressed by one interviewee:

> I can be with my kids during the day, clean the house, and prepare dinner ahead of time. Then when I get to the office I can finally sit down. I consider my paid work a break. It takes a lot less energy to answer that phone at night than it does to take care of the house all day.

In summary, although the results of this study cannot be generalized to the wider shiftworking population, this research takes a first step toward moving shiftwork research into the broader framework of work and family. Application of the relevant work-family measurement scales has yielded results that largely support many of the findings from the more traditional shiftwork literature. Previous evidence that shiftwork disrupted time for self, family, and social pursuits (Akerstedt and Torsvall, 1978; Frost and Jamal, 1982; Mott et al., 1965; Tasto et al., 1978) found support in the high work-family conflict and low individual time management scores obtained in this research. Similarly, reexamination of work orientations by use of standardized scales has lent support to previous research associating shiftwork with reduced job satisfaction and increased work conflict (Jamal, 1981; 1989; Jamal and Baba, 1992; Kundi et al., 1980).

The work and family framework also served as a guide to examining some of the potential moderators of shiftwork response, such as gender and parental status. As expected, gender and parental status were significantly related to difficulties in terms of individual functioning (problematic for women) and individual time management (problematic for both women and parents). These findings underscore the need to interpret shiftwork response in the context of these potential moderating variables.

Finally, qualitative interview data obtained in this research highlight the disparity between a workplace that is rapidly changing, and an infrastructure that lags behind. In this organization, operating hours continued to expand with no concomitant increase in support for the workers affected by the changes. In addition, the "double day" described by many of the shiftworking mothers indicated that few adjustments to accommodate their work hours had been made at home either. Such observations illustrate some of the unique pressures that may exist for the modern shiftworker, as the confluence of labour force, social, and economic changes increase pressures from both the work and home domains.

Policy Implications

Trends indicate that shiftwork will continue to figure prominently in work scheduling as organizations attempt to increase output and meet the growing demand for round-the-clock services. Like the participating company in this research, many organizations have yet to adapt to the changing needs of an increasingly diverse workforce. Anticipated labour demand in high skill areas means that governments, labour, and industry may have to become more responsive to the needs of the modern shiftworker if they are to meet staffing goals, attract skilled workers, and ensure equity and employee well-being.

Organizations have perhaps the most direct role to play, as many of the problems identified in this research appeared to be related as much to low control over work hours as to the work hours themselves. Although centralized scheduling may be the most feasible alternative in situations involving a great number of employees, complex business demands, and varying coverage needs, the scheduling in this organization was done at such a high level that individual needs were virtually invisible to those doing the scheduling. Organizations might want to see if there is not a more comfortable "middle position" that might meet their need for high-level control and integration while better serving employee needs. Greater employee involvement in scheduling might also bolster output and coverage as employees may be in the best position to match work hours to business demands at the local level.

Unions, too, may need to be called on to review their demands in terms of work scheduling, and to investigate whether traditional approaches are still meeting the needs of today's worker. In this research, for example, preferential scheduling meant "plum" day shifts went to tenured employees, and thereby, imposed a real burden on young parents with families who were perhaps most in need of flexibility. In addition, in the face of recent management cost-cutting efforts, many labour organizations are understandably committed to maintaining the 40-hour work week for their members. Accordingly, part-time work options may be resisted, although reduced hour arrangements may be very attractive to shiftworkers (as they were to shiftworking mothers in this research). Secure, *voluntary* part-time work and job share options may provide a win-win alternative, affording employees more time for personal pursuits, while offering organizations scheduling flexibility outside of the traditional work day.

Although much of the needed change will rely primarily on the cooperation and ingenuity of organizations, unions, and workers, governments have a role to play in setting the stage for these initiatives. As facilitators, they might want to ensure that the infrastructure is in place to accommodate any new work arrangements that may emerge through management-labour efforts. As information disseminators, governments may want to continue to monitor and publicize labour force changes, and provide support for research that might help in the sharing of innovative "success stories". As employers, they may want to experiment with scheduling strategies that give their own employees more input into their work hours, and use their role as model employers to show that shiftwork can "work" for both employees and organizations.

Appendix A: Tables

Table 1: Daily Work Schedule, Paid Workers Age 15-64, Canada, 1995 and 1991

Schedule	1995		1991	
	'000	%	'000	%
All Paid Workers	11,027	100	10,332	100
Regular Daytime	7,499	68	7,250	70
Non-Day Shifts	3,528	32	3,082	30

Table 2: Non-Day Shiftworkers by Shift Type, Paid Workers Age 15-64, 1995 and 1991

Schedule	1995		1991	
	'000	%	'000	%
All Non-Day Shiftworkers	3,528	100	3,082	100
Regular Afternoons	559	16	508	16
Regular Midnights	205	6	142	5
Rotating	1,128	32	940	30
Split Shift	110	3	84	3
On Call	264	7	262	9
Irregular Shift	1,160	33	1,064	35
Other	103	3	82	3

Source: Tables 1 and 2 were calculated by author from Statistics Canada, 1995 and 1991 Surveys of Work Arrangements, special tabulation by Human Resources Development Canada, November, 1997.

Table 3: Daily Work Schedule by Gender and Full-Time/Part-Time Status, Paid Workers Age 15-64, Canada, 1995

Full-Time/Part-Time Status	All Paid Workers	Regular Daytime Schedule	Non-Day Schedule	(% of Non-Day Workers)							
				All	Afternoons	Midnights	Rotating	Split Shift	On Call	Irregular	Other
	'000	%		%							
Men	**5,740**	**67**	**33**	**100**	**14**	**7**	**38**	**3**	**6**	**29**	**2**
Full-time	5,197	71	29	100	13	8	45	3	3	26	2
Part-time	543	25	75	100	21	5	11	3	20	38	3
Women	**5,287**	**69**	**31**	**100**	**17**	**4**	**25**	**3**	**9**	**38**	**4**
Full-time	3,856	78	22	100	15	6	33	4	3	35	4
Part-time	1,431	46	54	100	20	2	16	2	16	40	3

Source: Calculated by author from Statistics Canada, 1995 Survey of Work Arrangements, special tabulation by Human Resources Development Canada, November, 1997

Table 4: Daily Work Schedule by Gender and Family Status, Paid Workers Age 15-64, Canada, 1995

Family Status	All Paid Workers	Regular Daytime Schedule	Non-Day Schedule	(% of Non-Day Workers)							
				All	Afternoons	Midnights	Rotating	Split Shift	On Call	Irregular	Other
	'000	%		%							
Men	**5,740**	**67**	**33**	**100**	**14**	**7**	**38**	**3**	**6**	**29**	**2**
With spouses	3,574	73	27	100	11	6	47	4	3	26	3
with child(ren) under 16	1,966	73	27	100	12	7	47	3	3	26	3
with child(ren) under 6	1,015	72	28	100	12	6	46	4	3	26	3
Lone parents with child(ren) under 16	47	72	28	100	14	4	38	--	12	28	3
Women	**5,287**	**69**	**31**	**100**	**17**	**4**	**25**	**3**	**9**	**38**	**4**
With spouses	3,316	74	26	100	15	4	28	4	9	37	3
with child(ren) under 16	1,625	73	27	100	17	4	29	3	9	33	5
with child(ren) under 6	768	71	29	100	21	4	32	2	8	28	4
Lone parents with child(ren) under 16	236	70	30	100	18	5	28	3	9	35	1

Source: Calculated by author from Statistics Canada, 1995 Survey of Work Arrangements, special tabulation by Human Resources Development Canada, November, 1997
Notes: -- number too small to be expressed.

Table 5: Individuals in Dual-Income Couples by Work Schedule, Work Status and Presence of Children, Paid Workers, Age 15 to 64, Canada, 1995

	Total		Husband/wife both		At least one	
	'000	%	'000	%	'000	%
All workers in dual-income couples	4,647	100	2,584	100	2,064	100
Husband/wife both full-time	3,333	72	2,066	80	1,267	62
Husband full-time only	1,169	25	472	18	698	34
Wife full-time only	105	--	35Q	--	70	--
Husband/wife both part-time	41	--	--	--	28Q	--
With child(ren) under 18	2,698	100	1,472	100	1,226	100
Husband/wife both full-time	1,849	69	1,132	77	716	58
Husband full-time only	782	29	315	21	466	38
Wife full-time only	53	--	18Q	--	35Q	--
Husband/wife both part-time	--	--	--	--	--	--
With preschool child(ren) under 6	1,192	100	631	100	561	100
Husband/wife both full-time	783	66	478	76	305	54
Husband full-time only	364	31	136	22	227	40
Wife full-time only	36Q	--	--	--	24Q	--
Husband/wife both part-time	--	--	--	--	--	--

Source: Calculated by author from Statistics Canada, 1995 Survey of Work Arrangements, special tabulation by Labour and Household Surveys Analysis Division, November, 1997

Notes: -- number too small to be expressed. Q estimate is subject to high sampling variability and should be used with caution.

Table 6: Individuals in Dual-Income Couples in Which at Least One Partner Works a Non-Day Shift, Paid Workers, Age 15 to 64, Canada, 1995

	Total		Husband daytime/wife		Husband non-day/wife		Husband/wife both non-day	
	'000	%	'000	%	'000	%	'000	%
All workers in dual-income	2064	100	827	100	824	100	412	100
Husband/wife both full-time	1267	62	411	50	610	74	247	60
Husband full-time only	698	34	395	48	167	20	136	33
Wife full-time only	70	--	--	--	40Q	--	--	--
Husband/wife both part-time	28Q	--	--	--	--	--	--	--
With child(ren) under 18	1226	100	479	100	506	100	241	100
Husband/wife both full-time	716	58	213	44	366	72	137	57
Husband full-time only	467	38	255	53	115	23	97	40
Wife full-time only	35Q	--	--	--	23Q	--	--	--
Husband/wife both part-time	--	--	--	--	--	--	--	--
With preschool child(ren) under 6	561	100	232	100	206	100	123	100
Husband/wife both full-time	305	54	96	41	144	70	65	53
Husband full-time only	227	40	127	55	46	22	54	44
Wife full-time only	24Q	--	--	--	--	--	--	--
Husband/wife both part-time	--	--	--	--	--	--	--	--

Source: Calculated by author from Statistics Canada, 1995 Survey of Work Arrangements, special tabulation by Labour and Household Surveys Analysis Division, November, 1997

Notes: -- number too small to be expressed. Q estimate is subject to high sampling variability and should be used with caution.

Table 7: Sample by Shift, Gender, and Parental Status (Survey respondents, n = 272)

	Male				Female			
	With children <18		Without children <18		With children <18		Without children <18	
	Count	%	Count	%	Count	%	Count	%
Rotating	29	52.7	16	44.4	56	62.2	48	52.7
Days	26	47.3	20	55.6	34	37.8	43	47.3
Total	**55**	**100.0**	**36**	**100.0**	**90**	**100.0**	**91**	**100.0**

Notes:
1. This sample includes only non-career employees.
2. The category "without children" includes married couples with no children, and couples with only older children 18 years and over.

Table 8: Reason for Working Current Schedule (Survey respondents, n = 272)

	Male				Female			
	With children <18		Without children <18		With children <18		Without children <18	
	Rotating	Days	Rotating	Days	Rotating	Days	Rotating	Days
				(Percent)				
Requirement of job	89.3	95.8	100.0	88.9	83.6	36.4	89.1	56.8
Earn more money	0	0	0	0	0	0	0	5.4
Family responsibilities	3.6	4.2	0	0	14.5	57.6	0	8.1
Allow time for study	3.6	0	0	5.6	0	0	0	0
Other	3.6	0	0	5.6	1.8	6.1	10.9	29.7

Table 9: Why Did You Initially Choose a Job Requiring Shift Work?
(Interview respondents, mothers of children under 18, rotating shift schedule, n = 24)

	(%)
Only way in to the company	33.3
Good money	33.3
I didn't choose shiftwork-- it was brought in later	20.8
Wanted this type of work	12.5
All I could find	12.5
Convenient location	8.3

Table 10: What Are the Advantages of Working Your Particular Shift Arrangement?

	(%)
Economic	
Differential	54.2
Daycare costs reduced	25.0
None	33.3
Home-related	
Can shop, run errands during non-peak times	41.7
More time with spouse	16.7
Get chores done before leaving for late shift	16.7
None	25.0
Work-related	
Relaxed atmosphere, less hectic on late shifts	29.2
More relaxed customer base at night, more personal service	12.5
None	62.5
Social life	
"What social life?"	20.8
Can visit friends before leaving for late shift	16.7
None	66.7

Table 11: What Are the Disadvantages of Working Your Particular Shift Arrangement?

	(%)	
Social life		
I miss evening functions, parties	45.8	
All my friends, relatives work days	16.7	
None	25.0	
Home-related		
I miss my kids, seldom see them, in bed when I get home	45.8	
I miss dinner with the family		29.2
No set schedule, no routine	20.8	
None	4.2	
Economic		
Rely on take out food	20.8	
None	58.3	
Work-related		
Get the "crazy" customers at night	8.3	
Fatigue, still tired when leaving for work again	8.3	
Resources not available on late shift (other units, coworkers, etc.)	8.3	
None	62.5	

Table 12: Coworker Support for You as a Shiftworker (Interview respondents, n = 24)

	(%)
Coworkers make shiftwork easier by:	
Trading shifts	58.3
Companionship, we're all in the same boat, etc.	20.8
They do nothing to make shiftwork easier	20.8
Coworkers make shiftwork harder by:	
Not trading with me	16.7
They do nothing that makes shiftwork more difficult	83.3
I would like my coworkers to:	
Nothing needed from coworkers	79.2

Table 13: Supervisor Support for You as a Shiftworker

	(%)
Supervisor makes shiftwork easier by:	
Being responsive to trade requests, flexible	16.7
Has done nothing to make shiftwork easier	79.2
Supervisor makes shiftwork harder by:	
Not being responsive to trade requests, emergencies, is inflexible	16.7
Has done nothing to make shiftwork more difficult	83.3
I would like my supervisor to:	
Nothing needed from supervisor	91.7
There's nothing my supervisor *can* do-- scheduling is at higher level, out of his/her control	45.8

Table 14: Organizational Support for You as a Shiftworker

	(%)
Organization makes shiftwork easier by:	
Allowing us to trade shifts	29.2
Has done nothing to make shiftwork easier	54.2
Organization makes shiftwork harder by:	
Requiring us to find our own replacements	12.5
Has done nothing to make shiftwork more difficult	58.3
I would like the organization to:	
Provide more flexibility in scheduling (flextime, allow us more input, etc.)	20.8
Not make us find our own replacements (sometimes we need to miss work like any employee)	16.7
Introduce preferential scheduling	16.7
Post schedule further in advance	12.5
Nothing needed	16.7

Appendix B: Measures and Constructs

Individual Outcomes

Stress was measured by means of the Perceived Stress Scale (PSS; Cohen, Kamarck and Mermelstein, 1983). The PSS was designed to assess appraisals of the extent to which one's current life situation is unpredictable, uncontrollable and burdensome. Cohen et al.'s (1993) modified 9-item measure (the original scale contained 14 items) was used in this analysis. Respondents answer the PSS by indicating on a 5-point Likert-type scale the frequency within the last month that they have experienced various stressful feelings. Higher scores on this measure indicate greater levels of perceived stress. A Cronbach's alpha of .87 was obtained on this measure.

Life Satisfaction was measured using the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen and Griffin, 1985). The SWLS was designed to measure the respondent's global life satisfaction. The SWLS is a Likert-type scale on which respondents indicate the extent to which they agree with 5 statements of their present state. Higher scores indicate greater levels of life satisfaction. A Cronbach's alpha of .91 was obtained on this measure.

Work-Family Outcomes

Work-family conflict, as defined by Kahn et al. (1964) is a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect. Overload exists when the total demands on time and energy associated with the prescribed activities of multiple roles are too great to perform the roles adequately or comfortably. Role interference occurs when conflicting demands make it more difficult to fulfil the requirements of multiple roles.

Overload was assessed using a modified version of the scale developed by Bohen and Viveros-Long (1981) to measure the impact of flextime programs on reducing work-family stress. The scale enables employed persons to indicate on a Likert format how often they feel strains of various kinds related to time for job and time for family. High scores indicate greater conflict between work and family. Cronbach's alpha was .83 for the overload measure.

Interference from work to family and *interference from family to work* were assessed by means of a 9-item Likert type scale developed by Gutek, Searle and Kelpa (1991). High scores indicate higher levels of perceived interference. Family to work interference yielded a Cronbach's

alpha of .77. Coefficient alpha for work to family interference was .64, somewhat low, but within the "acceptable" range for alpha according to criteria given by Bohrnstedt and Knoke (1994).

Time Management Outcomes

Individual time management and *family time management* were measured using the Family Time Management Scale (Bohen and Viveros-Long, 1981). This scale taps respondents' feelings about the logistics of the integration of work and non-work life-- how easy or difficult it is to accomplish certain activities (e.g., interactions with schools, health services, or various other institutions or individuals in the social environment in which the family functions).

This scale has two groups of questions. One set consists of 10 items (items 1 through 5, 7 through 10, and 17) and reflects management of *individual* time. Items 11 through 16 deal with interaction with children and, therefore, reflect *family* management time. Respondents indicate on a scale of 1 to 5 how difficult it is for them to have time for the various activities. Both sub-scales are summed averages of the relevant item scores. High scores indicate greater ease in time management. Cronbach's coefficient alpha was computed as .90 for the individual time scale, and .84 for the family time management measure.

Work Outcomes

Organizational commitment refers to loyalty to the employing organization. The nine-item short form of the Job Commitment Scale developed by Mowday et al. (1979) was used in this study to measure commitment. A 5-point Likert-type scale (1 indicating strongly disagree, 5 indicating strongly agree) was used for all items. The scale score is the summed average of the item scores. High scores indicate greater commitment to the organization. Cronbach's alpha coefficient was .91 for this measure.

Intent to turn over is defined as an individual's desire to cease being an organizational member. This construct was measured using a modified two-question scale from the Michigan Organization Assessment Questionnaire (Mowday et al., 1979). A 5- point Likert-type scale (1 indicating strongly disagree, 5 indicating strongly agree) was used. The scale score is the summed average of the two item scores. High scores indicate high intent to turn over. A Cronbach's coefficient could not be calculated due to the inclusion of only two items in this score; however,

this scale correlates highly with organizational commitment (and is in fact often used as a subscale of the commitment scale; Mowday et al., 1979).

Job satisfaction is the degree to which employees have a positive affective orientation toward employment. Quinn and Shepard's (1974) scale was used in this study. Employees indicate how satisfied they are with their jobs in general, their pay, their work hours, their work schedule and their work tasks on a scale of 1 (very dissatisfied) to 5 (very satisfied). Job satisfaction is calculated as the summed average of item scores. High scores represent high job satisfaction. Cronbach's alpha for this measure was .70.

Job tension was assessed using the Job Tension subscale of House and Rizzo's (1972) Work Stress Scale. A 5-point Likert scale (1 indicating strongly disagree, 5 indicating strongly agree) is used. High scores indicate high job tension. Cronbach's alpha for this measure was .85.

Measures of Potential Moderating Variables

Perceived work-family control Control is defined as the belief that one can exert some influence over the environment (Ganster and Fusilier, 1989). Perceived control over work and family pressures was assessed using a modified version of a 14-item scale developed by Thomas and Ganster (1995). This scale allows respondents to indicate on a 1 to 5 Likert type format the extent to which they have control over various aspects of work and family life (such as the ability to make a phone call from work, the ability to choose vacation days, etc.). High scores indicate high control. The modification of this scale involved reducing the original 14-item version to 7 items relevant to this research, and adding an 8th item, "How much choice to you have over which shift you will work?". The computed Cronbach's alpha coefficient for this modified scale was .63.

Schedule preference was measured by means of a question designed for this research: "To what extent are the following work arrangement appealing to you?". Seven scheduling arrangements were then listed (rotating, fixed afternoon, fixed midnights, fixed daytime, job share, flextime, compressed work week), and respondents were asked to rate these on a 5-point Likert format from "very appealing" to "not appealing". High scores indicate strong preference for the schedule options.

Schedule control was measured via a single item, also designed for this research: "To what extent do you have any say as to which shift you are scheduled to work?" Respondents indicated on a 5-point scale their perceived level of input ranging from "a great deal of input" to "little or no input."

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